Left Out at Sea: Highly Migratory Fish and the Endangered Species Act

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Of the nearly 2,000 threatened and endangered species protected by the Endangered Species Act (ESA), not one is a highly migratory fish. Despite well-documented population declines in many species of highly migratory fish over the past fifty years, including tuna, marlin, and shark, no highly migratory fish has ever been listed for protection.

In light of current controversy over the proposed protection of Atlantic bluefin tuna under international and domestic law, this Comment seeks to explore reasons for the curious absence of any protection for highly migratory fish under the ESA. Specifically, this Comment will examine how societal perceptions and values of fish as commercial commodities perpetuate a statutory and administrative regime that militates against the protection of highly migratory fish under the ESA.

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INTRODUCTION

The congressional enactment of a wide range of environmental regulatory regimes in the 1960s and 1970s marked a new age for environmental stewardship in the United States.¹ Beginning in the early 1960s, Congress established and expanded the framework for federal and state regulation of broad swaths of the natural environment, including the air, water, land, and biodiversity of the United States.² This expansion of government regulation of

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the environment was an unprecedented assumption of responsibility by the U.S. Government for the protection of the natural environment.3

Concomitant with the scope of authority and assumption of responsibility of these legislative acts, Congress declared broadly the importance of biodiversity, and it established lofty goals, which in retrospect seem to have been overly optimistic.4 Finding that endangered and threatened “species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people,”5 Congress declared its intent to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved”6 in passing the Endangered Species Act (ESA) of 1973. Similarly, in passing the Magnuson Fishery Conservation and Management Act (MSA) of 1976, Congress stated that it was “taking immediate action to conserve and manage the fishery resources found off the coasts of the United States”7 to “achieve and maintain, on a continuing basis, the optimum yield from each fishery.”8 Yet in the fourth decade after the passage of the ESA, the Marine Mammal Protection Act (MMPA), and MSA, the United States—and indeed the world—still finds itself in the midst of massive declines in biodiversity, especially marine biodiversity.9

This precarious situation has prompted warnings of an impending “aquacalypse”10 and the “end of the line”11 when it comes to the future of the commercial fishing industry and, in particular, the viability of “highly migratory species” of fish.12 Although the ESA theoretically contains the

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3. See Elliott et al., supra note 1, at 317–18.
6. Id. § 1531(b).
12. The MSA defines “highly migratory species” of fish as tuna, marlin, oceanic shark, sailfish, and swordfish. 16 U.S.C. § 1802(21). The term “highly migratory species” is a creature of
framework for protection of highly migratory fish, no highly migratory fish are listed or proposed to be listed as endangered or threatened under the ESA. Only four highly migratory fish are considered “species of concern.” Given the dire predictions of the health of the world’s highly migratory fish, one natural question is why there has thus far been no ESA protection for these species.

This Comment seeks to answer this question by suggesting that the statutory regime, on both the international and domestic levels, and the administrative and regulatory regime governing the protection of highly migratory fish reflect general societal perceptions and values of fish as commercial commodities. Part I describes the current major threats to highly migratory marine fish and provides a brief description of the purposes, administration, and protections of the ESA and MSA. Part II discusses and analyzes the interaction between and among social perceptions and values of highly migratory fish and the legal and regulatory framework regarding their protection. This Comment concludes that ESA protection for highly migratory fish is highly unlikely, unless there is a fundamental shift in the inherent valuation of fish—or there is some cataclysmic environmental event that creates the political will to undertake such a listing—either of which will
likely involve the international context.\(^\text{18}\)

I. BACKGROUND: THREATS TO MARINE BIODIVERSITY AND HIGHLY MIGRATORY FISH

This Part provides background on the threats to marine diversity generally and to highly migratory fish specifically. Part I.B describes generally the Endangered Species Act, its purposes, administration, and protection. Part I.C similarly describes the Magnuson-Stevens Fishery Conservation and Management Act.

A. Threats to Marine Biodiversity

Although threats to marine biodiversity are numerous, the primary threats are overexploitation and habitat destruction.\(^\text{19}\) Other threats include the effects of climate change, pollution, encounters with ship traffic, disease, water diversion and upstream land development, the introduction of invasive species, aquaculture and fish hatcheries, noise pollution, and other natural threats relating to the biology of an individual species or the unique characteristics of its environment.\(^\text{20}\)

Overexploitation encompasses a broad range of threats relating to the harvest of a target marine species,\(^\text{21}\) and it describes generally the deleterious effects of the commercial, recreational, and cultural harvest of marine resources. These threats are both direct and indirect—a species targeted for harvest is directly threatened by commercial harvest, but even species not specifically targeted will be indirectly threatened if they, for example, generally swim with or near the target species.\(^\text{22}\) Indirect effects also include trophic cascades,\(^\text{23}\) increased competition for prey, and habitat degradation from

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\(^{18}\) This Comment does not seek to make a normative claim regarding whether the ESA should protect highly migratory fish. Rather this Comment seeks to highlight the difference in protection for highly migratory fish compared with other types of fish and wildlife.

\(^{19}\) See Kappel, supra note 9, at 277–78 (describing the two primary threats to marine biodiversity, in order of commonality).

\(^{20}\) See id.

\(^{21}\) See id.

\(^{22}\) See id.

\(^{23}\) The Trophic Cascade hypothesis suggests that changes in the numbers of fish higher up on the food chain have cascading effects down through lower parts of the food chain, such that these effects alter the ecosystem in a broad way, beyond the effects on a single predator species and its prey. Jordi Bascompte, Carlos J. Melian & Enric Sala, Interaction Strength Combinations
Highly migratory fish are suffering considerable overexploitation pressure from both direct and indirect harvest. The four highly migratory marine fish that are currently listed as “species of concern” by the National Oceanic and Atmospheric Administration (NOAA) are the dusky shark, the porbeagle shark, the basking shark, and the sand tiger shark. All four species of shark face threats from overexploitation, not only from the direct harvesting by commercial and recreational fishing, but also from indirect harvesting by incidental catch from targeting of other fish. Moreover, the current plight of the bluefin tuna is a prime example of the threat of overexploitation from direct commercial harvest. The demand for raw tuna meat is not only high in its traditional market of Japan, but is increasingly so across the world, and especially in North America. As a result, at least in the case of the Atlantic bluefin tuna, “unprecedentedly low and declining” populations “suggest a population collapse.”

The white marlin is an example of overexploitation pressure from indirect targeting. While the direct threat to the white marlin is neither typical nor significant, the indirect threat to the marlin is intense and comes primarily from the incidental effects of commercial pelagic longliners. As a result, the population of white marlin, by some estimates, is as low as 6% of its original level. Assessing the threat from bycatch is particularly problematic because it can be especially quick acting and relatively undetectable, and it will...
continue as long as the fishing effort for the target fish continues, regardless of
the amount of target fish caught.32

The general societal attitude toward fish compounds the threat of
overexploitation. This attitude views fish as consumable commodities, not
species that require conservation:

As a society, we value the commercial production of seafood, and
recreational experiences from wild stocks. We are struggling with the
realization that fishing, like farming, forestry, and grazing, has
environmental consequences. . . . As a society, however, we are not
used to thinking of fisheries in such terms, and we lack some of the
scientific knowledge, and social decision structures to adequately
address many of the issues.33

The sheer range of threats to marine habitat poses a general systemic
threat to marine biodiversity. Threats to marine habitat include “hard” damage
to the marine environment from destructive fishing techniques, such as
trawling,34 bottom dredging,35 and “blast fishing,”36 and from non-fishing
operations, such as mining.37 Less direct, but perhaps equally destructive,
threats to marine habitat include water pollution, development of coastal
wetlands, and the decline of coral reefs due to ocean acidification.38 Although
the conventional wisdom is that overexploitation is the primary threat to marine
species, “the lack of protection of habitat for fisheries cannot be ignored as a
contributing cause of declines in some fish stocks.”39

Most highly migratory fish are pelagic40 fish species that may appear
relatively insulated from many threats to marine habitat when compared with
their freshwater and anadromous brethren.41 The open-ocean habitat is

32. See generally Rebecca L. Lewison et al., Understanding Impacts of Fisheries Bycatch
threats from bycatch is inherently difficult).
33. David Fluharty, Habitat Protection, Ecological Issues, and Implementation of the
Sustainable Fisheries Act, 10 ECOLOGICAL APPLICATIONS 325, 326 (2000) (internal citation
omitted).
34. Les Watling & Elliott A. Norse, Disturbance of the Seabed by Mobile Fishing Gear: A
Comparison to Forest Clearcutting, 12 CONSERVATION BIOLOGY 1180, 1181 (1998).
35. Id. at 1191.
36. John D. Reynolds, Nicholas K. Dulvy & Callum M. Roberts, Exploitation and Other
Threats to Fish Conservation, in 2 HANDBOOK OF FISH BIOLOGY AND FISHERIES 319, 329 (Paul
37. Edward T. Game et al., Pelagic Protected Areas: The Missing Dimension in Ocean
39. Fluharty, supra note 33, at 325.
40. This term generally refers to the ocean water column, excluding the sea bottom,
commonly referred to as the “high seas.” See K. David Hyrenbach, Karen A. Fomey & Paul K.
Dayton, Marine Protected Areas and Ocean Basin Management, 10 AQUATIC CONSERVATION:
41. Cf. Game et al., supra note 37, at 362 (“Many pelagic species are highly mobile, with
some species covering thousands of kilometers annually.”).
relatively inaccessible, and thus direct threats to highly migratory fish and threats to their habitat are less visible to the lay observer. Highly migratory fish, however, still face threats from habitat alteration and degradation. These fish face numerous threats in their open-ocean habitat, including “advances in navigation technology [that] allow exploitation of formerly inaccessible [oceanic and deep-water] areas,” and the “cumulative impact of sublethal stressors” in the form of chemical and acoustic pollution and increased resource competition. In addition, although highly migratory fish such as tuna spend a substantial portion of their lives in the open ocean, away from territorial and internal waters where most anthropogenic impacts on fish habitat occur, they are still susceptible to harm via habitat degradation in the form of accumulation of toxic chemicals from pollution near coastal migration routes and spawning areas.

In summary, highly migratory fish face a broad range of threats to their survival. These threats include overexploitation, in the form of direct and indirect harvest, as well as extensive threats from habitat degradation and destruction. Threats to habitat take the form of “hard” damage to the sea floor and spawning areas, and “soft” damage in the form of behavior disruption, resource competition, and the accumulation of toxic chemicals in the open ocean environment.

B. Endangered Species Act: Purposes, Administration, and Protections

Recognizing that overexploitation and habitat destruction were the two primary threats to fish and wildlife, Congress enacted a series of legislative acts in the late 1960s and 1970s that culminated with the Endangered Species Act of 1973. The ESA’s purpose was not merely to protect fish and wildlife just as they reached the brink of extinction, but to create a regulatory regime that could manage and conserve species sufficiently early to avoid approaching that brink. Indeed, Congress enacted the ESA to “expand[] the practical effect of the program to the spirit of the [Endangered Species Preservation Act of 1966 and Endangered Species Conservation Act of 1969],” because the regulatory scheme at that time “simply [did] not provide the kind of management tools

42. Kappel, supra note 9, at 278.
43. Game et al., supra note 37, at 362. For example, the use of drifting fish aggregation devices, a passive fishing method, can draw schools of tuna into areas with a dearth of food supplies, increasing competition with other predators in the area. Id. at 363.
44. See, e.g., D. Ueno et al., Global Pollution Monitoring of Butyltin Compounds Using Skipjack Tuna as a Bioindicator, 127 ENVTL. POLLUTION 1, 2 (2004).
45. See Fluharty, supra note 33, at 326–27.
46. See Ueno et al., supra note 44, at 10–11.
47. See Game et al., supra note 37, at 362; see also G. Sarà et al., Effect of Boat Noise on the Behaviour of Bluefin Tuna Thunnus Thynnus in the Mediterranean Sea, 331 MARINE ECOLOGY PROGRESS SERIES 243, 244 (2007) (discussing tuna in migration).
needed to act early enough to save a vanishing species."\textsuperscript{50} Since the ESA's enactment in 1973, it has become "one of the strongest and most controversial environmental laws in the United States."\textsuperscript{51}

The Supreme Court has acknowledged the strength and far reach of the ESA. For example, in \textit{Tennessee Valley Authority v. Hill}, the Court upheld an injunction against the completion of Tellico Dam on the Little Tennessee River, at a cost of over $100 million to U.S. taxpayers, because of the perceived existential threat the Dam posed to the snail darter, a fish classified as an endangered species under the ESA.\textsuperscript{52} In describing the ESA and its antecedents, the Court called the ESA "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."\textsuperscript{53} And in analyzing the overall framework of the ESA, the Court concluded, rather unequivocally, that "[t]he plain intent of Congress in enacting this statute . . . was to halt and reverse the trend toward species extinction, whatever the cost. This is reflected not only in the stated policies of the Act, but in literally every section of the statute."\textsuperscript{54}

The ESA gives jurisdiction over the administration of terrestrial land and fish species to United States Fish & Wildlife Service (USFWS) and marine and anadromous species to National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS).\textsuperscript{55} At first glance, the number of species protected under the ESA appears to be substantial. As of mid-2009,\textsuperscript{56} USFWS and NMFS had listed almost 1,900 plant and animal species as either threatened or endangered under the ESA.\textsuperscript{57} For the United States, the ESA list is composed of 1,011 endangered species (411 animal species, 600 plant species), and 309 threatened species (163 animal species, 146 plant species).\textsuperscript{58} Of species listed for protection by the United States, the

\textsuperscript{50} Id.
\textsuperscript{54} Id. at 699 (quoting \textit{TVA v. Hill}, 437 U.S. at 184).
\textsuperscript{57} \textit{2009 Endangered Species Bull.}, supra note 14, at 43.
\textsuperscript{58} Id.
vast majority, over 95%, inhabit terrestrial land and freshwater habitat. 59 Conversely, of the almost 1,900 species listed under the ESA, including proposed listings, only 73 are aquatic species managed by NMFS. 60

NMFS's management authority spans several biodiversity conservation and protection laws, including the Endangered Species Act, Marine Mammal Protection Act, and Magnuson-Stevens Fishery Conservation Act. 61 Of the 68 officially threatened or endangered species under NMFS management of the ESA, 21 are marine mammals, 8 are marine turtles, 34 are marine and anadromous fish, 4 are marine plants, and 1 is a marine invertebrate. 62 Although not required to by the ESA, NMFS maintains two additional lists—the Candidate Species List and the Species of Concern List—in addition to the Threatened and Endangered Species Lists. 63

Theoretically, these four lists taken together cover the range of protection required to conserve marine biodiversity. Based on the "best scientific and commercial data available . . . and after taking into account those efforts, if any, being made by any State or foreign nation," the Endangered Species List should include those species that are "in danger of extinction through all or a significant portion of its range." 64 The Threatened Species List should include species that are "likely to become [ ] endangered species within the foreseeable future throughout all or a significant portion of its range." 65 These lists should reflect relevant factors relating to habitat destruction, overexploitation, disease and predation, inadequate existing regulatory mechanisms, and other natural or anthropogenic factors. 66

The Candidate Species List reflects those species for which the public, NMFS, or both believe listing is appropriate, including "species being

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59. This percentage is an approximation based on the total number of listed species under NMFS jurisdiction, which generally includes all marine species with only a few exceptions, divided by the total number of listed species, as of November 13, 2009. See Summary of Listed Species, supra note 56; Nat'l Oceanic & Atmospheric Admin. Nat'l Mar. Fisheries Service, Endangered & Threatened Species Under NMFS's Jurisdiction, http://www.nmfs.noaa.gov/pr/pdfs/species/esa_table.pdf [hereinafter Species Under NMFS's Jurisdiction].

60. Species Under NMFS's Jurisdiction, supra note 59. Sixty-eight species have been listed for protection, and an additional five are currently proposed for listing. Id.


62. Species Under NMFS's Jurisdiction, supra note 59.


65. Id. § 1532(6).

66. Id. § 1532(20).

67. Id. § 1533(a)(1)(A)–(E) ("(A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.").
considered by the Secretary of [Commerce or the Interior] for listing as an endangered or threatened species, but not yet the subject of a proposed rule.\textsuperscript{68} To reflect concerns about status in the face of scientific uncertainty, NMFS created the Species of Concern List, which is distinct from the Candidate Species List, even though there is overlap between the two lists.\textsuperscript{69} The Species of Concern List may include species for which "significant concerns or uncertainties remain regarding . . . status and/or threats," even if NMFS has determined, through a biological status review, that ESA listing is unwarranted.\textsuperscript{70} According to NMFS, neither designation "confer[s] procedural or substantive protections of the ESA" and each applies only to species under NMFS jurisdiction.\textsuperscript{71}

\textbf{C. Magnuson-Stevens Fishery Conservation and Management Act: Purposes, Administration, and Protections}

As an additional management tool specific to highly migratory fish, Congress conferred upon NMFS substantial authority under the Magnuson-Stevens Fishery Conservation and Management Act to manage and conserve fishery resources in the United States.\textsuperscript{72} Broadly speaking, the declared purposes of the MSA relate to its name—conservation and management of fishery resources.\textsuperscript{73} Specifically, the MSA seeks to "support and encourage" international fishery agreements,\textsuperscript{74} promote "sound conservation and management principles,"\textsuperscript{75} achieve and maintain "optimum yield" from fisheries,\textsuperscript{76} develop underutilized fisheries,\textsuperscript{77} and promote the protection of essential fish habitat.\textsuperscript{78}

Although NMFS does not have exclusive jurisdiction over fishery management regionally—Regional Fishery Management Councils prepare fishery management plans for review and approval by the Secretary of Commerce\textsuperscript{79}—it maintains exclusive jurisdiction over highly migratory fish

\begin{itemize}
\item[\textsuperscript{68}] Candidate Species List, \textit{supra} note 63, 71 Fed. Reg. at 61,022 ("In other words, any species that is undergoing a status review that we have announced in a Federal Register notice will be considered a candidate species.").
\item[\textsuperscript{69}] \textit{See supra} note 15.
\item[\textsuperscript{70}] Establishment of Species of Concern List, \textit{supra} note 15, at 19,976.
\item[\textsuperscript{71}] \textit{Id}.
\item[\textsuperscript{73}] 16 U.S.C. \textsection 1801(b)(1), (5).
\item[\textsuperscript{74}] \textit{Id.} \textsection 1801(b)(2).
\item[\textsuperscript{75}] \textit{Id.} \textsection 1801(b)(3).
\item[\textsuperscript{76}] \textit{Id.} \textsection 1801(b)(4). The definition and implications of "optimum yield" will be discussed more specifically \textit{infra} notes 148–152 and accompanying text.
\item[\textsuperscript{77}] \textit{Id.} \textsection 1801(b)(6).
\item[\textsuperscript{78}] \textit{Id.} \textsection 1801(b)(7).
\item[\textsuperscript{79}] \textit{Id.} \textsection 1832, 1834 (2006 & Supp. 2009).
\end{itemize}
that migrate across regional boundaries as specified in the MSA.\(^{80}\) Accordingly, NMFS has exclusive jurisdiction over fish such as tuna, sailfish, and some species of shark.\(^{81}\)

Any fishery management plan, whether prepared by the Secretary of Commerce or a Regional Fishery Management Council, must “contain the conservation and management measures . . . necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery.”\(^{82}\) These management and conservation measures include not only permit requirements, and catch, area, time, and equipment restrictions, but also the power to close completely a fishing area.\(^{83}\)

The MSA requires fishery management plans to prevent overfishing,\(^{84}\) rebuild overfished stocks, and be consistent with ten national standards that include ecological, economic, public safety, and scientific issues.\(^{85}\) The requirement to prevent and end overfishing, and to rebuild stocks, does not exist in a vacuum—the MSA requires relatively extensive oversight by Congress and the Secretary of Commerce to ensure that fishery management plans address overfishing. By statute, the Secretary must report annually to Congress and the Fishery Management Councils on the status of U.S. fisheries, and identify fisheries that are overfished or are approaching an overfished condition.\(^{86}\) If the fishery is not one over which the Secretary of Commerce has exclusive jurisdiction, the applicable Fishery Management Council has two years to develop a fishery management plan that immediately ends the overfished condition.\(^{87}\) If the Council fails to do so, then the Secretary must develop such a plan within nine months.\(^{88}\) If the Secretary has exclusive jurisdiction over the fishery, he also has two years to develop a fishery management plan that immediately ends the overfished condition.\(^{89}\)

Furthermore, the Secretary must review these fishery management plans every two years to determine whether “adequate progress” toward ending overfishing and rebuilding the stock has occurred.\(^{90}\) If adequate progress has not occurred, then the Secretary must “immediately make revisions necessary to achieve adequate progress,” for plans that he formulated, or notify the

\(^{80}\) See id. § 1852(a)(3).

\(^{81}\) See Cufone, supra note 72, at 29.


\(^{83}\) Id. § 1853(b).

\(^{84}\) The definition of “overfishing” and “overfished” will be discussed more specifically infra Part III.A.1.


\(^{86}\) Id. § 1854(e)(1) (2006).

\(^{87}\) Id. § 1854(e)(3) (2006 & Supp. 2009).

\(^{88}\) Id. § 1854(e)(5).


\(^{90}\) Id. § 1854(e)(7).
applicable Council and recommend further conservation and management measures to achieve adequate progress. In addition to addressing the overfished stock of fish, the fishery management plan must account for various factors, including "the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock of fish within the marine ecosystem." 

Given this rather robust (and byzantine) framework for protection and monitoring and the myriad threats posed to marine wildlife generally and highly migratory fish specifically, it is surprising that NMFS only has "concerns" regarding the status of four highly migratory fish and protects none under the ESA. 

II. FISH AS GOODS: SOCIETAL PERCEPTIONS AND THE LEGAL AND REGULATORY FRAMEWORK

This Part outlines the interaction between societal perceptions of fish as commercial goods and the legal and regulatory regimes governing the management of highly migratory fish. The different protective statuses accorded to marine mammals and highly migratory fish reflect societal perceptions of highly migratory fish as commercial goods. The domestic and legal framework that makes protecting highly migratory fish under the ESA difficult, if not impossible, reflects these perceptions. Furthermore, the scientific uncertainty surrounding highly migratory fish allows administrative and regulatory responses to defer considerably to the political preferences of the status quo, which largely oppose any formal ESA protection for highly migratory fish.

A. The Importance of Charisma: A Comparison of the MMPA and the MSA

The juxtaposition of highly migratory fish and marine mammals is helpful in examining why there are no highly migratory fish under ESA protection, or even considered for it. Marine mammals, particularly cetaceans, share many important characteristics with highly migratory fish. Both are highly migratory species of marine wildlife. Both are subjects of special regulatory regimes

91. Id. § 1854(e)(7)(A).
92. Id. § 1854(e)(4)(A).
93. See supra text accompanying notes 14–15.
94. i.e., whales, dolphins, and porpoises. ERICH HOYT, MARINE PROTECTED AREAS FOR WHALES, DOLPHINS, AND PORPOISES: A WORLD HANDBOOK FOR CETACEAN HABITAT CONSERVATION 1 (2005).
under international and domestic law. Both share a roughly similar body shape, although, in a biological sense, cetaceans relate more closely to humans. However, marine mammals have received considerably more attention for ESA protection than highly migratory fish—of the 73 marine species listed or proposed to be listed, 14 are cetaceans, and the only marine species to be de-listed because it has "recovered" is the gray whale, a cetacean. Because marine mammals are otherwise similar to fish, their charisma—which is a quality typically associated with large, visible, and publicly popular animals—may explain why marine mammals have fared better than fish in terms of ESA protection. An examination of the societal attitudes toward fish and other wildlife and the regulatory regimes created for the management of marine mammals and highly migratory fish—the Marine Mammal Protection Act and the Magnuson-Stevens Fishery Conservation and Management Act—reveals how these attitudes manifest themselves in disparate protections for the two groups in their respective regulatory regimes.

This sense of attachment to “charismatic” wildlife is important because it often informs the judgments made regarding the preservation of wildlife, particularly when science is unable to quantify the costs and benefits of preservation efforts. Society generally has difficulty properly accounting for the full range of costs and benefits associated with the preservation of endangered species. Although there is a wide range of benefits that society receives from nature and wildlife, including recreational, ecological, moral, scientific, aesthetic, utilitarian, and cultural benefits, the bias tends toward easily observable and quantifiable benefits. For fish generally, and especially for highly migratory fish, cost-benefit analysis initially defaults against conservation because the benefits are amorphous and the costs concrete.

98. See Travatio & Clement, supra note 95, at 206–07.
99. 2009 ENDANGERED SPECIES BULL., supra note 14, at 5.
101. “Charisma” is a somewhat nebulous term, but it generally describes the sense of “attractiveness” or attachment felt toward a species of wildlife. Highly attractive species (to humans) are often referred to as “charismatic megafauna.” See, e.g., Andrew Metrick and Martin L. Weitzman, Conflicts and Choices in Biodiversity Preservation, 12 J. ECON. PERSP. 21, 29 (1998).
103. Id. at 529–30.
104. See id. at 530.
This is especially the case for the MSA, a cognitive framework that favors quantification. Decision makers can easily quantify the cost of limiting fishing in monetary terms according to utilitarian, consumptive use. Much of the value of conservation, however, is not quantifiable. Furthermore, that which is quantifiable is often unobservable or works against the case for protection.\(^{105}\) Because the general knowledge of marine species is highly uncertain, especially for highly migratory fish,\(^{106}\) where quantifiable information favoring conservation exists, it may not be observable. Moreover, utilitarian benefits that affect a large number of people—such as increased water supply—can work against the case for protection.\(^{107}\) A regulatory regime such as the MSA that calls for a complex balancing of competing interests including both quantifiable and non-quantifiable values may not be able to properly balance these interests.\(^{108}\) It is almost inevitable that underlying societal preferences regarding the utility of highly migratory species inform the ultimate result, regardless of whether the final judgment is actually in the interests of conservation.

Also relevant to a discussion of the societal attitudes toward highly migratory fish is the reality that such attitudes toward different types of wildlife differ based on the appeal of the animal. For example, when asked whether they would be willing to accept a modification of an energy project that would result in greater cost to taxpayers, a majority of Americans surveyed only favored protecting certain endangered species.\(^{109}\) The respondents favored protection for relatively visible or “charismatic” species—a bald eagle, a mountain lion, a trout, a crocodile, and a butterfly\(^{110}\)—but were unwilling to make the same sacrifice for a snake, a spider, and a plant called the furbish lousewort.\(^{111}\)

The listing of an animal and spending for its recovery under the ESA largely comport with these differences in attitudes toward “favored” wildlife. Fauna such as mammals, birds, species characterized by large sizes, and unique species\(^{112}\) are all more likely than fish to be listed.\(^{113}\) Size significantly relates

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105. *See id.*
106. *See, e.g., infra* note 242 and accompanying text.
107. *Kellert, supra* note 102, at 530 (“If the project produced hydroelectric, agricultural, or increased drinking supply benefits, [as opposed to recreational benefits or benefits for one company], the public overwhelmingly supported the development activity regardless of its impact on the rare fish species.”).
109. *Kellert, supra* note 102, at 531.
110. *Id.* (The greatest number of respondents favored the bald eagle (89%), followed by the mountain lion (73%), trout (71%), crocodile (70%), and butterfly (64%).) Freshwater and anadromous fish species, as they relate to the discussion regarding charisma, are discussed, *infra,* at the Conclusion.
111. *Kellert, supra* note 102, at 531.
112. *See Metrick & Weitzman, supra* note 101, at 31 (defining “uniqueness” as when a species is the only species in its genus).
to the amount of dollars expended for recovery.\textsuperscript{114} Other factors that affect society's desire to protect a species include whether they are "aesthetically attractive, phylogenetically similar to human beings, and regarded as possessing the capacities for feeling, thought, and pain."\textsuperscript{115}

Despite sharing a number of similarities with highly migratory fish, cetaceans are more "charismatic," which affects society's desire to protect these species, rather than to manage them for consumption. Cetaceans are typically at least as large as many highly migratory fish, or much larger, depending on the species.\textsuperscript{116} Cetaceans are more phylogenetically similar to humans\textsuperscript{117} and are generally regarded as having the ability to feel, think, and suffer.\textsuperscript{118}

On the other hand, fish, especially highly migratory fish, are less charismatic than cetaceans and are not at the forefront of the public's mind when it comes to protection. Most people frequently encounter fish at the end of a hook or on their dinner plate. Consequently, contemplating the fish's capacity to think and feel pain is somewhat counterintuitive and may invite unwanted cognitive dissonance. This utilitarian view of fish as food may be the most helpful attitude—for conservation purposes—that highly migratory fish engender.\textsuperscript{119} The public's attitude regarding other highly migratory fish, such as sharks, is often characterized not just by utilitarian values, but also by fear or other "negative" and "moralistic" attitudes.\textsuperscript{120} Tellingly, societal attitudes toward the dolphin are, in contrast, characterized as "positive, aesthetic, and humanistic."\textsuperscript{121}

\textsuperscript{113} Id. (relative to fish, birds were most likely to be listed, followed by mammals, and reptiles. Amphibians were less likely to be listed. The differences in categories, with the exception of reptiles, were significant at the 5%, 1%, and 1% levels, respectively).

\textsuperscript{114} Id. Reptiles, for example, have significantly fewer dollars expended for recovery, on average. Id.

\textsuperscript{115} Kellert, supra note 102, at 533.


\textsuperscript{118} See Travalio & Clement, supra note 95, at 206–07.

\textsuperscript{119} For a more extensive discussion on the role of fish as commodities in conservation and protection, see infra Part II.B.


\textsuperscript{121} Id.
The contrast between the desire to protect cetaceans and other marine mammals for their aesthetic, humanistic, and charismatic value and the goal of managing highly migratory fish for their utilitarian value is evident in a comparison between the MMPA and the MSA. First, there are stark differences in the focus of the MSA and MMPA. The MSA is markedly utilitarian, with only a brief mention of non-utilitarian values such as history or culture, and even then, that discussion is specific to one region of the United States. The MMPA, in contrast, largely seeks to protect marine mammals by default.

The MSA’s ten national standards that fishery management plans must meet further highlight its utilitarian focus. These standards require Fishery Management Councils and/or NMFS to balance a variety of interests beyond the health of the species, including economic considerations, social considerations, and human safety. Six of the ten national standards are modified by “where practicable” or “[t]o the extent practicable” language, reflecting the statute’s deference to pragmatic considerations. National Standard One, which could fairly be conceived as the “primary” standard, is strongly rooted in utilitarian values, stating that “[c]onservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.” Additionally, National Standard One calls for a balancing of interests similar in kind to that suggested by the aggregate of the ten national standards. Thus, the MSA is in substance true to its name—an act for the conservation and management of natural resources—and contemplates

122. The findings, purposes, and policy of the MSA mention utilitarian words (resource, commercial, economy or economies or economic, food, revenue, employment, industry) in thirty-six instances. 16 U.S.C. §§ 1801(a)-(c) (2006 & Supp. 2009). Words representing more intangible, “charismatic” values (historical, cultural, legal, political, geographical) are only used in five instances (one instance per word), and these words are only used with reference to the Pacific Insular area of the United States. Id. § 1801(a)(10). Words representing broader ecological values (ecosystem, protection) appear three times. Id. § 1801(a)-(c). Moreover, “protection” does not refer to fish species, but to their habitat. Id. § 1801(a)(6), (b)(7).

123. See infra text accompanying note 146.


129. Id. § 1851(a)(1) (2006).

130. See id. § 1802(33)(A) (2006 & Supp. 2009) (defining optimum, in part, as the amount of fish that “will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems”).
conservation not for the sake of species or the ecosystem but for the preservation of "renewable natural resources." 132

The findings and declarations of policy for the MMPA with their focus on protecting marine mammals to preserve the health of the ecosystem and preserve the animals’ aesthetic and dignitary value stand in sharp contrast to the MSA. Although the MMPA contains some allusion to the utilitarian value of marine mammals, 133 Congress states plainly that the goal of the Act is to maintain a viable ecosystem: “[T]he primary objective of [the] management [of marine mammals] should be to maintain the health and stability of the marine ecosystem.” 134 Whereas the MSA’s findings and declarations of policy made substantial reference to the economic and commercial importance of fish, the MMPA notably includes the aesthetic importance of marine mammals. 135 In addition, in the report accompanying the legislation, the House Committee on Merchant Marine and Fisheries referred to marine mammals in almost humanistic terms, noting that other cultures treat marine mammals with “reverence” 136 and that marine mammals had been subject to “virtual genocide” and “exposed to a multitude of other indignities.” 137 Congress translated this recognition into a requirement that the taking of marine mammals under permits must be “humane,” 138 the definition of which included recognition of the ability of marine mammals to feel pain and to suffer. 139 Thus, it seems clear that Congress perceived marine mammals as more charismatic than fish, and accordingly, it articulated very different rationales and goals for their respective regulatory schemes.

If the MMPA is any indication, charisma translates into more substantive protections for a species. Marine mammals receive substantially more protection from the MMPA than fish do from the MSA. First, the MMPA sets a default norm of protection for marine mammals in Title I by declaring “a moratorium on the taking and importation of marine mammals . . . during which time no permit may be issued for the taking of any marine mammal and no marine mammal or marine mammal product may be imported into the

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133. See, e.g., id. § 1361(5)(B). However, Congress’s statement in Section 2(5) that “the protection and conservation of marine mammals and their habitats is therefore necessary to insure the continuing availability of [animal] products which move in interstate commerce” could be as much about justifying the MMPA under Congress’s Article I Commerce Clause power as it is an expression of the utilitarian value of marine mammals. See id. § 1361(5).
134. Id. § 1361(6); see also id. § 1361(2) (stating that marine mammal “such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part”).
135. Id. § 1361(6).
137. Id. at 12, reprinted in 1972 U.S.C.C.A.N. at 4144.
139. Id. § 1362(4).
Second, like fish designated as overfished under the MSA, marine mammals receive automatic protections upon a designation of “depleted” in the MMPA. However, the MMPA’s depleted designation confers substantially more protection than the MSA’s overfished designation, because it limits exemptions to the broad-based prohibition on the taking of marine mammals to scientific, educational, or conservation purposes, and to other relatively limited circumstances. The MSA, by contrast, does not require cessation of fishing of overfished stocks, but only that the appropriate governing authority develop a plan that ends overfishing—the rate of fishing that jeopardizes the stock—and rebuilds the stock within ten years.

Third, the benchmark goal in the MMPA—“optimum sustainable population”—is more protective than the “optimum yield” benchmark goal in the MSA. The MMPA defines optimum sustainable population as “the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element.” Thus as stated in the MMPA’s declarations of policy, the primary goal is not some specified level of exploitation or the preservation of economic or commercial activity, but the health of the ecosystem. By contrast, the health of the ecosystem is but one consideration in the MSA’s optimum yield benchmark. The primary goal of the MSA is the “overall benefit to the Nation, particularly with respect to food production and recreational opportunities” based on a maximum sustainable level of take. The fundamentally different goals of optimum sustainable population (ecosystem

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140. Id. § 1371(a) (2006 & Supp. 2009); see also id. § 1372(a) (2006).
141. See supra notes 72–83 and accompanying text.
143. Id. § 1371(a)(3)(B).
146. See George C. Coggins, Legal Protection for Marine Mammals: An Overview of Innovative Resource Conservation Legislation, 6 ENVTL. L. 1, 16–17 (1975–76) (noting that Congress adopted the standard of “optimum sustainable population” for the MMPA as a “middle course” between a total moratorium on the taking of marine mammals favored by environmentalists and an “optimum yield” approach favored by commercial interests); James A. R. Nafziger, The Management of Marine Mammals After the Fisheries Conservation and Management Act, 14 WILLAMETTE L. J. 153, 213–24 (1977–78) (“Optimum yield contemplates a fixed point of permissible exploitation, whereas optimum sustainable population, with its clear emphasis on protection, begins with a moratorium on any exploitation, subject to a range of acceptable population when takings are officially approved.”) (emphasis in original). See also infra notes 262–264 and accompanying text.
149. Id. § 1802(33)(A)–(B).
and species health) and optimum yield (human take and consumption) reflect the statutes' differing conceptions of marine mammals as wildlife to protect and marine fish as wildlife to consume.\textsuperscript{150}

The MSA only seeks to prevent fishing biomass levels from becoming so low that they "jeopardize the capacity of a fishery to produce the maximum sustainable yield on a continuing basis."\textsuperscript{151} Thus, by allowing the consideration of economic and social factors, the MSA permits fishing to continue to occur even when fishing biomass levels are far below maximum sustainable yield.\textsuperscript{152} This might be the case, for example, when a cessation of fishing for some period to allow the stock to recover to a level consistent with maximum sustainable yield would adversely affect a local fishing community. This mixture of economic and social goals with ecological goals in the optimum yield calculation allows short-term economic considerations to trump long-term conservation goals, resulting in an inherently less-protective standard than the MMPA's goal of optimum sustainable population.

Finally, the MMPA expressly contemplates working in concert with the ESA,\textsuperscript{153} whereas the MSA seeks to prevent the application of the ESA.\textsuperscript{154} The MMPA's broad default prohibitions on take of marine mammals suggest that it, like the ESA, is primarily a protective regulatory regime. The MSA, on the other hand, is more akin to a resource-extraction regulatory regime that seeks conservation only to the extent it preserves the resource's availability in the

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150. In one sense, however, the basis of optimum yield—maximum sustainable yield—is analogous to optimum sustainable population, because it is the point at which the population is most productive. The MSA's goal, however, is optimum yield, not maximum sustainable yield. See, e.g., id. § 1801(b)(4) (2006). And because optimum yield is less protective than maximum sustainable yield, it is less protective than the MMPA's optimum sustainable population standard. The goal of optimum yield is not to achieve maximum sustainable yield—rather, it is to achieve maximum sustainable yield adjusted downwards for economic, social, or ecological factors. Id. § 1802(33)(B) (2006 & Supp. 2009). While adjusting maximum sustainable yield downwards means there is a ceiling to how much take the MSA allows, an additional implication is that a lower level of biomass is required to achieve that lower level of "optimum yield." Optimum yield thus permits exploitation to levels of depletion where optimum sustainable population would not. See Nafziger, supra note 146, at 214. The MSA seeks only to prevent overfishing, and it does not define overfishing as a level or rate of fishing mortality that results in a level of biomass below one that is consistent with maximum sustainable yield or productivity, or even a level below one that is consistent with optimum sustainable yield. See, e.g., id. § 1853(a) (2006 & Supp. 2009); id. § 1802(34). Indeed, early commentators opined that "optimum yield is whatever it is said to be so long as it is said carefully," because the foundational principle behind optimum yield—i.e., the "greatest overall benefit to the Nation"—is "sufficiently loose that officials have a very wide range of discretion in determining what amounts of fish may be considered optimum." William T. Burke, U.S. Fishery Management and the New Law of the Sea, 76 AM. J. INT'L LAW 24, 28 (1982).


152. See infra note 250, and accompanying text. Even if the level of biomass was in an overfished condition, fishing could still be permitted as long as the applicable fishery management plan rebuilt the stock within ten years. See 16 U.S.C. § 1854(e)(4)(A) (2006 & Supp. 2009).


154. See infra note 283 and accompanying text.
\end{footnotesize}
future, allowing fish harvest at a level that approaches, but ultimately avoids, population collapse.  

But for charisma, highly migratory fish are similar in many ways to cetaceans. This suggests that charisma, at least in terms of a perceived ability to feel pain and experience suffering and a perceived likeness to humans, was a key element in Congress's decision to construct very different regulatory regimes for highly migratory fish and cetaceans. Sociological research, empirical studies, and vocal public opposition to recent proposed listings of highly migratory sport fish indicate a link between the lack of charisma in highly migratory fish and the lack of public support for their systematic protection.

B. Fish as Commerce: The Improbability of ESA Listing

The perception of fish as goods permeates the political and economic discussion regarding highly migratory fish management. Highly migratory fish are well known around the world for their commercial value. Consequently, ESA listing is untenable as a political matter, and may be improbable as an economic matter, as the concept of commercial extinction may appear to prevent highly migratory species from declining to a level that warrants ESA protection.

1. Politics as Obstacle: Fishing Interests and Institutional Structure

Due to the influence of interest groups, ESA listing for highly migratory fish is politically untenable. First, congressional intent in enacting the Magnuson Act and the Atlantic Tunas Convention Act was to prevent ESA listing in order to placate commercial and recreational interests. Second, commercial and recreational interests wield considerable influence over actions regarding the closure of fisheries for conservation purposes, as demonstrated by public comments made in response to the proposed listing of the white marlin in 2002. Finally, the division of authority between FWS and NMFS, under which jurisdiction over most commercialized species of fish belongs to the Department of Commerce, is further evidence of Congress's general conception of fish as consumable commercial goods, rather than as nature or intrinsically valuable wildlife.

   a. The Influence of the Commercial Fishing Industry: Evidence from Legislative History

The prospect of ESA listing for the bluefin tuna spurred the creation of a wide-reaching and complex regulatory regime governing the regulation of highly migratory fish. On April 2, 1975, approximately fifteen months after the

155. See supra note 150 and accompanying text.
enactment of the ESA, NMFS proposed listing the Atlantic bluefin tuna as threatened under the ESA.\textsuperscript{156} In response, the House of Representatives drafted and passed its first proposal for the MSA.\textsuperscript{157} The Senate followed the House's lead and just over a year after NMFS's proposal to list the bluefin tuna under the ESA, on April 13, 1976, the Magnuson Fishery Conservation and Management Act of 1976 became law.\textsuperscript{158} This was not a coincidence, but rather an instance of surprisingly quick and decisive congressional action. Furthermore, Congress's response to the proposal was not limited to the MSA. In fact, the Atlantic bluefin tuna's ESA listing proposal was an impetus, if not the impetus, for the long-delayed implementation of the international Atlantic Tuna Convention by the Atlantic Tunas Convention Act (ATCA).\textsuperscript{159} The relevant questions are thus (1) why Congress acted to prevent the listing of the bluefin tuna, and (2) what this action demonstrates about Congress's intent toward the protection of highly migratory fish. The histories of the ATCA and the MSA demonstrate that, while Congress was concerned about the conservation of highly migratory fish, its primary reasons for protecting the tuna related to commercial, rather than ecological, concerns.

Implemented prior to the MSA, the ATCA was a direct response to NMFS's Atlantic bluefin tuna ESA listing proposal. The Atlantic Tuna Convention had been in force for over seven years without domestic implementing legislation in the United States.\textsuperscript{160} The Senate Report attached to the ATCA makes clear that the impetus for final implementation of the Atlantic Tuna Convention was the prospect of ESA listing, and that the ATCA was intended to give NMFS enough regulatory authority to prevent ESA listing. First, NMFS noted, and the Senate acknowledged, that absent the ATCA, ESA listing was the only tool available to the Secretary of Commerce to regulate Atlantic bluefin tuna.\textsuperscript{161} Second, the Conference Committee explicitly addressed NMFS's Atlantic bluefin tuna listing proposal and implicitly expressed the Committee's desire for NMFS to terminate it. Although the ATCA made binding the International Commission for the Conservation of Atlantic Tunas (ICCAT) recommendations for Atlantic bluefin tuna, it limited NMFS's jurisdiction in territorial waters.\textsuperscript{162} However, the Conference Committee noted NMFS's concerns regarding the prompt establishment of regulations for the then-current fishing season.\textsuperscript{163} The Conference Committee further stated that if NMFS needed to waive certain provisions of the ATCA, it

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\item \textsuperscript{156} Atlantic Bluefin Tuna, Threatened Species—Fish, 40 Fed. Reg. 14,777 (Apr. 2, 1975).
\item \textsuperscript{158} See MSA, supra note 7.
\item \textsuperscript{159} S. REP. NO. 94-269, at 5 (1975), reprinted in 1975 U.S.C.C.A.N. 742, 744.
\item \textsuperscript{160} See id.; infra notes 303–308 and accompanying text.
\item \textsuperscript{161} S. REP. NO. 94-269, at 5, 12 (1975).
\item \textsuperscript{162} See id. at 9 (acknowledging that states would have difficulties in "developing appropriate conservation programs within their territorial waters").
\item \textsuperscript{163} Id.
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could, provided "all action to declare the bluefin tuna a threatened species under the Endangered Species Act of 1973 [is] terminated."\textsuperscript{164} The ATCA took effect on August 5, 1975.\textsuperscript{165} Just over a week later, on August 13, NMFS declared its intention to terminate its proposed ESA listing, and it subsequently promulgated regulations under the ATCA to govern fishing for the Atlantic bluefin tuna.\textsuperscript{166}

The legislative history of the MSA also speaks to Congress's concern for the protection of fish as commerce, as opposed to the protection of fish as a species. Congress acknowledged that it intended the MSA "to protect the domestic fishing industry," by "provid[ing] for the development of regional fisheries management plans and regulations that would govern fishing within the fisheries zone and control over anadromous fish to the extent of their range."\textsuperscript{167} And while Congress declared that the MSA's purpose was to protect, conserve, and enhance the fishery "resources" of the United States, much of the congressional deliberation over the MSA focused on ensuring that domestic fishermen competed on the same level as foreign fisherman in domestic waters.\textsuperscript{168} Indeed, Congress framed its concluding point on the need for the MSA in terms of maximizing economic benefits domestically, by "giv[ing] our Nation and fishermen a greater opportunity to benefit economically and increas[ing] our food supply from these resources, while at the same time plac[ing] on our Government the obligation to conserve and wisely use our fisheries."\textsuperscript{169}

Congress's treatment of highly migratory fish in the first iteration of the MSA further illustrates its prioritization of commerce over conservation. Although the first version of the MSA gave plenary authority to NMFS to manage anadromous fish,\textsuperscript{170} Congress instead chose to give jurisdiction over highly migratory fish to the Secretary of Commerce solely under various international agreements.\textsuperscript{171} Despite support for the MSA from most of the fishing industry and environmental conservationists, Congress made a point of exempting highly migratory fish to placate open-ocean fishermen, who feared "the demise of their industries."\textsuperscript{172}

The interaction of the MSA and international agreements, including the Atlantic Tuna Convention, IATTC, and agreements reached pursuant to negotiations at the United Nations Conferences on the Law of the Sea weighed

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\item \textsuperscript{164} \textit{Id.}
\item \textsuperscript{165} \textit{Tuna Fisheries, Atlantic Tuna Fisheries, 40 Fed. Reg. 33,978 (Aug. 13, 1975).}
\item \textsuperscript{166} \textit{Id.}
\item \textsuperscript{167} \textit{H.R. REP. NO. 94-445, at 1, 21 (1975).}
\item \textsuperscript{168} \textit{See id. at 21, 30.}
\item \textsuperscript{169} \textit{See id. at 44.}
\item \textsuperscript{170} \textit{See id. at 21.}
\item \textsuperscript{171} \textit{See Fishery Conservation and Management Act of 1976, Pub. L. No. 94-265, § 103, 90 Stat. 331, 336.}
\item \textsuperscript{172} \textit{H.R. REP. NO. 94-445, at 23 (1975).}
\end{itemize}
heavily in Congress's deliberation over the MSA. However, congressional focus on international efforts did not stem from a desire to support the most effective regime for protecting highly migratory fish for the sake of the species and the ecosystem. Rather, Congress was primarily worried about preserving access to highly migratory fish for U.S. anglers around the world, by avoiding retaliatory actions by other coastal nations and by fostering "reciprocity" in access with other coastal nations. In other words, Congress sought to avoid "prejudicing U.S. distant water fishing interests such as tuna and shrimp" through unilateral action such as ESA listing. Indeed, a substantial portion of the House of Representatives Committee on Merchant Marine and Fisheries Report accompanying the MSA addressed the international commercial implications of the bill and the specific objections of offshore and distant fishing interests, such as tuna and shrimp fishermen. Ensuring continued participation in the tragedy of the commons rather than taking steps to protect the bluefin tuna as a species, seemed to be the overriding purpose of the highly migratory fish exemption in the MSA.

The proposed bluefin tuna listing under the ESA in 1975 moved Congress to take swift action on the fisheries question. First, Congress acknowledged in deliberations that it implemented the ATCA in response to the proposed ESA listing of the tuna. Second, after passing the ATCA, Congress then moved to implement a more comprehensive fishery management scheme—the MSA. While it is less clear that the MSA was a direct response to the proposed ESA listing of the tuna, the tuna's proposed listing certainly played some part.

The MSA solved generally with respect to commercialized fish species what the ATCA solved specifically with respect to the Atlantic bluefin tuna. In creating the MSA, Congress perhaps woke up to the prospect of ESA listing of many other commercialized fish species, which unlike the tuna, did not have international agreements concerning their management. For many anadromous species, for instance, Congress did not have the relatively easy option of implementing an already ratified international agreement. To prevent listing of these and other highly migratory species, Congress would have to formulate a

173. Id. at 57–58.
174. Id. at 43.
175. Id. at 23.
178. See generally Garrett Hardin, The Tragedy of the Commons, 162 SCIENCE 1243, 1244 (1968) ("Each man is locked into a system that compels him to increase his [consumption] without limit—in a world that is limited[,] ... each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.").
179. S. REP. No. 94-269, at 5 (finding that the ESA "is presently the only legal authority available to the Secretary for protecting the declining stock of bluefin tunas" and that legislation is needed "to provide ... for the conservation of the highly migratory tunas").
180. See supra notes 156–159 and accompanying text.
more comprehensive scheme. Although Congress was concerned with factors besides ESA listing, such as the belief that unilateral action would be ineffective\textsuperscript{181} and the desire to make the fishing industry as a whole more sustainable,\textsuperscript{182} the foundational consideration—protection of fishing commerce—is common to each of these factors. Thus, through the MSA, Congress implicitly relayed its belief that ESA listing, which was a regulatory option available at the time, was not a favored option because of its perceived detrimental effect on the fishing industry.

\textit{b. The Influence of the Recreational Fishing Industry: Evidence from a Recent Proposed Listing of a Sport Fish}

In debates over fishing policy, commercial fishing interests are not the only interest groups that can wield significant political power—recreational fishing interests can as well. The public comments to the petition to list the Atlantic white marlin under the ESA reflect the highly charged nature of issues surrounding the protection of highly migratory fish.\textsuperscript{183} NMFS summarized these comments in the 2002 Status Review for the Atlantic white marlin, which it prepared in response to the listing petition.\textsuperscript{184} As reflected in the comments, public sentiment aligned with substantial recreational fishing interests and “without exception” opposed ESA listing, calling it “ineffective or even counter-productive,” duplicative or redundant, “devastat[ing],” alienating to commercial and recreational fishing interests, “a shame,” and “a dangerous precedent.”\textsuperscript{185} One comment even suggested amending the ESA to prevent NMFS from considering similarly “ridiculous” petitions.\textsuperscript{186} There were expressions of disbelief and outright denial.\textsuperscript{187} Even conservation-minded commentators expressed their opinion that ESA listing was “the wrong way” to conserve the Atlantic white marlin.\textsuperscript{188} Indeed, “anglers . . . [were] whipped into a hysterical frenzy over the prospect of the ESA putting an end to recreational trolling offshore . . . [and] urged . . . their congressmen to interfere in the listing

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  \item \textsuperscript{181} H.R. Rep. No. 94-445, at 23 (1975).
  \item \textsuperscript{182} See id. at 43.
  \item \textsuperscript{183} See infra notes 316–324 and accompanying text.
  \item \textsuperscript{184} Crabtree et al., supra note 116, at iii.
  \item \textsuperscript{185} Id. at Appendix 1-1 to 1-4.
  \item \textsuperscript{186} Id. at Appendix 1-4.
  \item \textsuperscript{187} Id. at Appendix 1-2 (“No highly migratory species has ever been considered for ESA listing before. There is no precedent, and it is hard to believe that a fish occupying such a large habitat can actually be endangered”).
  \item \textsuperscript{188} Id. at Appendix 1-3. This is the view of the National Coalition for Marine Conservation (NCMC), which declined to join the Center for Biological Diversity (known at the time as the Biodiversity Legal Foundation) in the listing petition. Nat’l Coal. for Marine Conservation, Quelling the ESA Hysteria (Aug. 1, 2002), http://www.savethefish.org/esa_notes.htm. The NCMC did not support the petition because it disagreed that ESA protection was the best means to conserve highly migratory fish. It did not join the relatively shrill comments directed at discrediting the ESA—rather it sought to calm fishing interests, and in particular, recreational fishing interests, as to the implications of ESA listing for Atlantic white marlin. Id.
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As public outcry over the Atlantic white marlin listing petition demonstrates, there will be substantial obstacles to any listing of highly migratory fish under the ESA, even where the primary opposition comes only from recreational fishing interests. Given such sentiments, the structure and history of fisheries legislation in the United States, including the ATCA and the MSA, and the attitudes toward fishing as commerce, conservationists may find the listing of a highly migratory fish under the ESA to be exceedingly difficult.

c. Authority over Commerce: Evidence from the Statutory Structure

The involvement of the Secretary of Commerce in the conservation and management of wildlife is a relatively recent phenomenon. Before 1970, the Secretary of the Interior had jurisdiction over both terrestrial and marine species, as reflected in the predecessors to the ESA: the Endangered Species Preservation Act of 1966 (ESPA) and the Endangered Species Conservation Act of 1969 (ESCA). Interestingly, even prior to the involvement of the Commerce Department in fish management, these earlier versions of the ESA demonstrated the tension between the commercialization and conservation interests in fish. For example, the ESPA applied only to “native fish and wildlife,” and left presumably non-native highly migratory fish to the recently adopted Atlantic Tuna Convention. The next iteration of endangered species legislation, the ESCA, was less equivocal. In the ESCA, Congress mandated that the Secretary of the Interior designate ports of entry for all non-commercial imports of fish. Congress created this broad restriction on the ability of the Secretary to enforce prohibitions on imports of commercial fish, perhaps “to minimize the interference of this requirement with normal commercial imports.”

While these indications of an underlying commercial framework are subtle, a clearer demonstration of the notion of fish as commercial commodities occurred in 1970 with the creation of the National Oceanic & Atmospheric Administration (NOAA), and NMFS within NOAA. Although NMFS’s

193. See infra note 299; supra notes 173-178 and accompanying text.
195. Id. § 4(d) (“For the purposes of facilitating enforcement . . . the Secretary . . . shall . . . designate, by regulation, any port or ports in the United States for the importation of fish and wildlife, other than shellfish and fishery products imported for commercial purposes . . . .”); see also S. REP. No. 91-526, at 9 (1969), reprinted in 1969 U.S.C.C.A.N. 1413, 1422.
196. S. REP. No. 91-526, at 32, reprinted in 1969 U.S.C.C.A.N. at 1439 (testimony of William B. Macomber, Jr., Ass’t Sec’y Congressional Relations, Dep’t of Ag.).
predecessor, the Bureau of Commercial Fisheries, and its predecessor, the Fish and Fisheries Commission,\(^7\) clearly conceived of fish as commodities, they were under the purview of the Department of the Interior, which had comprehensive responsibility over the protection and management of all fish and wildlife.\(^8\) However, in 1970, Congress, acting to effectuate an Executive Order, transferred all functions and authority to manage marine wildlife formerly vested in the Secretary of the Interior to the Secretary of Commerce and, by extension, to the newly created NOAA Administrator.\(^9\) The legislative history behind the Reorganization Plan is sparse, and there is no indication why President Nixon desired the jurisdictional split or why Congress agreed to it.\(^10\) However, one can reasonably infer that Congress’s action signaled its view that a commerce-focused agency was most appropriate for the regulation of fish.

Congress’s lack of concern for the implications of the jurisdictional split for oceanic fish—in contrast to its general concern for marine mammals—further suggests Congress’s fundamental conception of fish as commerce. In deliberations over the Marine Mammal Protection Act in 1971, the Merchant Marine and Fisheries Committee noted the jurisdictional split between the Department of the Interior, to which the MMPA assigned jurisdiction over pinnipeds\(^2\) and polar bears, and the Department of Commerce, to which the MPA assigned jurisdiction over whales, dolphins, porpoises, and seals.\(^2\) At the time, the Committee commented it was “not satisfied that the jurisdictional split between agencies is helpful or useful.”\(^2\) Congress nonetheless preserved this arrangement as a compromise between environmentalists, who distrusted the Department of Commerce to adequately protect marine mammals, and supporters of commercial and recreational interests.\(^2\) In the MMPA, Congress

\(^{197.}\) Act of Feb. 9, 1871, No. 22, 16 Stat. 593-94 (1871) (Joint Resolution for the Protection and Preservation of the Food Fishes of the Coast of the United States).

\(^{198.}\) See supra notes 190-191 and accompanying text.


\(^{200.}\) See id. President Obama recently took note of this odd jurisdictional split, and his remarks illustrate the typical commerce-centric view of fish. Barack Obama, U.S. President, Remarks by the President in State of Union Address (Jan. 25, 2011), available at http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address (“I hear [the bureaucratic complexity] gets even more complicated once they're smoked. (Laughter and applause.)”).


\(^{203.}\) Id. at 3, reprinted in 1972 U.S.C.C.A.N. 4144, 4146. It is unclear whether the Committee was referring to the jurisdictional split generally, or the jurisdictional split concerning marine mammals. See id.; see also Coggins, supra note 146, at 17 (noting that the jurisdictional split was “an awkward alignment”).

\(^{204.}\) Coggins, supra note 146, at 16-17 (“[M]arine mammal partisans in 1972 certainly preferred giving Interior the upper hand [in enforcing the MPA, rather than Commerce.]”). The Merchant Marine and Fisheries Committee did not expressly criticize the Department of
took care to assign authority and responsibility to the Secretary of the Interior and the "Secretary of the department in which the National Oceanic and Atmospheric Administration is operating." \(^{205}\) In contrast, Congress was not as concerned about preserving NOAA's authority over oceanic fish in the MSA, and assigned authority and responsibility to the Secretary of Commerce generally. \(^{206}\) Despite putative action to consolidate management of marine wildlife in a Department of Natural Resources almost four decades ago, \(^{207}\) the Secretary of Commerce retains broad authority over the management of marine fish, but only splits authority over marine mammals with the Secretary of the Interior.

In addition to the broader jurisdictional split between the management of terrestrial and marine wildlife, the specific structure and allocation of authority to Regional Fishery Management Councils (FMCs) is further evidence of the commercial bias in fishery management. Although NMFS retains final authority to approve, disapprove, or partially approve fishery management plans, \(^{208}\) FMCs are the primary management bodies for fish under regional jurisdiction. \(^{209}\) Although, the MSA conceives of FMCs as merely advisory, \(^{210}\) FMCs have interpreted this "advisory" authority broadly to include "defining and identifying a depleted species, assessing the soundness of scientific information and deciding if it should be used as a basis for fisheries management, and drafting and recommending to NMFS management options to rebuild depleted fisheries and manage fishing efforts and impacts." \(^{211}\) NMFS did not object to this interpretation. \(^{212}\)

Even though the MSA contemplates FMCs that "reflect the expertise and interest of the several constituent States in the ocean area over which such Council is granted authority," \(^{213}\) FMCs are dominated by commercial and recreational fishing interests. \(^{214}\) In 2003, commercial and recreational interests

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206. Id. § 1802(39) (2006 & Supp. 2009) (assigning authority to "the Secretary of Commerce or his designee").
210. See id. (describing the functions of each Council, including oversight by Secretary).
211. Cufone, supra note 72, at 29.
212. Id.
214. Cufone, supra note 72, at 29.
represented slightly over 85% of Council membership.215 Even though the Secretary of Commerce retains exclusive jurisdiction over the management of highly migratory fish, the MSA mandates Council participation—and by extension, the participation of commercial and recreational fishing interests—in regulating these fish populations.216 Despite some congressional trepidation regarding the transfer of jurisdiction over marine species to the Department of Commerce shortly after the 1970 Reorganization Plan, the enactment of the MSA’s relatively decentralized governance structure seems to have trumped any plans to go through with any such reorganization. Whether the implementation of the MSA’s governance structure ultimately played out as Congress originally intended is a separate question, but what seems clear is that over the years, commercial and recreational interests have firmly entrenched their values and sympathies in fisheries management.217 Aside from the general public outcry that may result from an attempt to list a highly migratory (and highly commercialized) fish, any such proposed listing will likely face substantial resistance from the commerce-centric nature of the institutionalized fishery management regime.

2. “Commercial” and Biological Extinction: Differing Levels of Species Health

According to some opponents of ESA protection for highly migratory fish, the very commercialization that drives the threat of overexploitation may save the species. This argument claims that ESA protection of highly migratory fish may not be necessary if commercial forces reduce, or stop altogether, overfishing and allow the species to recover. One commenter, in public hearings for the Atlantic white marlin listing petition, echoed a commonly held belief regarding the fecundity of highly migratory fish: “It’s a big ocean out there, and it’s impossible to catch the last fish.”218 The distinction between biological extinction and commercial extinction applied to highly migratory fish theoretically means that the species may reach “commercial extinction” before it faces the danger of biological extinction. In the modern era, however, with improved fishing techniques and more lucrative markets for prize fish, commercial extinction may very well be close to biological extinction.

In terms of definitions, the two concepts of extinction are relatively straightforward. Biological extinction is the “traditional” conception of species extinction, where complete extermination occurs. The ESA seeks to prevent this type of extinction.219 Commercial extinction, on the other hand, occurs

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215. See id. at 29.
when "the cost of capture of overharvested populations [...] eventually exceed[s] economic returns . . . and effort [...] transfer[s] to other species." The MSA, in contrast to the ESA, contemplates the prevention of commercial extinction, at least where the cause of commercial extinction is overexploitation.

Commercial extinction and biological extinction represent similarly low, but not identical, levels of species health. One particularly illustrative example of the gap between biological extinction and commercial extinction is the story of the Canadian stock of Atlantic cod off the coast of Newfoundland. The plight of the Newfoundland cod is noteworthy not only because of its historical abundance, but also because of its dramatic fall from seemingly limitless abundance. There is evidence that the Atlantic cod was the subject of commercial fishing as far back as the 1600s and as recently as the 1960s, the breeding population was estimated at almost two billion individual fish. By 1983, however, the population had declined approximately 99.9%. Despite this dramatic decline, however, a fishing ban was still not necessary—scientists did not yet consider the stock to be collapsed, though they recognized that it was on the brink. Accordingly, scientists recommended a 50% reduction in Atlantic cod quotas, but only a 10% reduction survived political haggling. This lack of political will subsequently sent the Atlantic cod into a "free fall." In 1992, the Canadian government finally closed the fishery to allow the stock to recover. This was an acknowledgement that the fishery was no longer economically viable, not that there were no more Newfoundland cod left. Despite the dramatic decline in population, fishermen were still able to catch 122,000 tons of Atlantic cod in the year prior to the fishery's closure, which finally closed when the spawning biomass had declined to a mere 22,000 tons. Although the Committee on the Status of Endangered Wildlife in


221. The MSA probably was not intended to address instances where diminishing economic returns are unrelated to fishing—i.e., if consumers, for some reason, decided to stop consuming fish, causing demand and prices to collapse. This alternative conception of commercial extinction focuses solely on market demand. See generally William E. Magnusson, Commercial Extinction Exists and Is Often a Conservation Objective, TURTLE & TORTOISE NEWSL., Jan. 2002, at 11, available at http://www.chelonian.org/ttn/PDF/TTN5.pdf.


224. Id.

225. Woodward, supra note 222, at 83.

226. Id.

227. Id.

228. See id. at 84.

229. See id.

230. Id. at 83–84.
Canada listed the Newfoundland cod as endangered under Canadian law, discussion relating to the health of the fish typically does not involve any contemplation that it will face outright extinction. Concern relates more to the Newfoundland cod’s role in the ecosystem than its outright disappearance; as one fisheries scientist notes, “[The Newfoundland cod] might never come back, at least not in their former abundance . . . Once you start changing the whole ecosystem, the community structures and sizes, you’ve got a whole new ball game.”

While the occurrence of “commercial extinction” may negate the need for ESA protection for highly migratory fish, it may be just another excuse in a long line of rationalizations to justify the continuation of the status quo. In the eighteenth and nineteenth centuries, it was widely believed that marine organisms were simply immune from extinction because of their sheer numbers. The aggregated effect of some unique characteristics of marine species—such as high fecundity, naturally variable populations, and large dispersal potential—fueled the “commonly held perception” that marine species were less vulnerable to extinction than terrestrial species. From the 1950s through the 1970s, it was still widely believed that “commercial extinction of a fish population . . . [was] inconceivable since fishing would become unprofitable long before the population was wiped out.” To those who believe in market economics and the inherent uncertainty of the oceans, this logic is attractive. In relation to the case of the Newfoundland cod, one economist aptly predicted, twenty years before the collapse of the stock, that collapse did not necessarily mean extinction: “[C]od . . . are sufficiently difficult to find as virtually to guarantee their preservation from extinction by commercial fishing with present technology.”

Unfortunately, a key premise in this reasoning—that fish are sufficiently difficult to find to prevent their extinction by commercial fishing—is slowly eroding in the modern era. One of the main causes of the dramatic collapse of the Newfoundland cod was the overwhelming effectiveness of industrial

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232. Scientists characterize the Newfoundland cod as “severely depleted,” and at “low population levels.” Id. at 307. Although the stock does not appear to be recovering, it is persisting—the Canadian government even reopened the fishery again in 1999 to targeted cod fishing, albeit unsuccessfully. Id. The Canadian government closed the fishery again just four years later in 2003. Id.
233. Woodward, supra note 222, at 88 (quoting Richard Haedrich, fisheries scientist at Memorial University) (internal quotations omitted).
235. Kappel, supra note 9, at 275.
fishing techniques, which destroyed spawning habitat for the cod, doubly complicating the species' ability to recover.239 While uncertainty may limit the fishing industry's ability to find all the fish, it also prevents decisive and effective action to conserve fish, and perhaps even permits counterproductive action, such as reopening a fishery when it should remain closed.240 Although scientists are becoming more aware of how fishing may indirectly cause the extinction of marine species,241 there is still substantial uncertainty as to when, at what level, and how these indirect effects play out.242

This complex interaction between biology, scientific uncertainty, and market dynamics is particularly relevant to highly migratory fish and suggests that the level of species health indicated by commercial extinction may be relatively close to that of biological extinction. For this reason, it is easily conceivable that biological extinction may follow from commercial fishing. For example, the world tuna market exhibits some characteristics of a traditional market. A recent study found that decreases in the supply of bluefin tuna increased prices, decreased consumption, and increased consumption of skipjack tuna, a substitute species for the bluefin.243 However, while bluefin tuna are still experiencing an alarming downward trajectory,244 the trade in the bluefin tuna remains highly successful and lucrative, despite astronomical increases in price. In 2001, a single bluefin tuna sold for approximately $178,000.245 If the continued rarity of the bluefin tuna translates into greater prestige and higher prices, the market may keep the tuna in demand such that its level of commercial extinction corresponds dangerously closely with biological extinction.246 Even if species are not entirely depleted by commercial extraction, it is worth noting that there is uncertainty surrounding how long low levels of marine populations can survive, much less whether they can

239. Woodward, supra note 222, at 90.
240. Hutchings & Reynolds, supra note 223, at 307 ("Canada's reopening of a targeted fishery for northern cod[,] . . . applying pressure on a population that had declined 99.9% and shown no scientifically defensible signs of recovery, serves as one of the more unfortunate examples of a nation's repeated abuse of marine ecosystems").
241. Edgar, Samson & Barrett, supra note 220, at 1297 (noting that indirect effects such as "habitat damage, bycatch, and trophic cascades" may lead to extinction).
242. Hutchings & Reynolds, supra note 223, at 307 ("The current low population sizes represent uncharted territory in which the scientific capacity to predict future biological dynamics is severely diminished.").
244. See supra notes 26–27.
246. See id. at 331 ("high prestige and price of rare species often widen the geographical net to meet demand, thereby threatening even those species that have large ranges . . . [the] increasing price associated with biological and market rarity has meant that it is economically viable to fly fish to markets from . . . distant sources.").
recover.\textsuperscript{247} Despite these challenges, however, the widespread belief that biological extinction from commercial fishing is "inconceivable" persists, and this belief will likely continue to be an obstacle to ESA protection of highly migratory fish.

C. The "Screen" to ESA Listing: Redundant Domestic and International Statutory Protections

The commercialization of highly migratory fish is further reflected in a legal framework that makes protecting these fish under the ESA difficult, if not impossible. This Section explores the interaction of the ESA with other statutory and international convention law in two separate subsections. The management of highly migratory fish under the MSA provides a "screen" to their listing under the ESA. In theory, at least, international protections for highly migratory fish might similarly obviate the need for ESA listing.

1. Redundant Domestic Protections: An Examination of the MSA and ESA

The relevant conservation status in the MSA that triggers conservation and management requirements beyond what fishery management plans require generally is the "overfished" status.\textsuperscript{248} The MSA defines "overfishing" or "overfished"\textsuperscript{249} as a "rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis."\textsuperscript{250} The implementing regulations for the MSA define maximum sustainable yield as "the largest long-term average catch or yield that can be taken from a stock . . . under prevailing ecological, environmental conditions."\textsuperscript{251} In other words, maximum sustainable yield is the "maximal possible catch such that the population biomass can continue to regenerate."\textsuperscript{252}

\textsuperscript{247} See supra note 242.
\textsuperscript{249} MSA implementing regulations make a further distinction between the definition of overfishing and overfished: "overfished" relates to biomass of a stock or stock complex, and 'overfishing' pertains to a rate or level of removal of fish from a stock or stock complex." 50 C.F.R. § 600.310(e)(iv)(2)(i)(A) (2009).
\textsuperscript{250} 16 U.S.C. § 1802(34) (2006 & Supp. 2009). The "jeopardy" language accords considerable discretion to the Secretary. See Recreational Fishing Alliance v. Evans, 172 F. Supp. 2d 35, 38–39 n.4 (D.D.C. 2001) ("[Maximum sustainable yield] values used in determining [optimum yield] will necessarily be estimates ... associated with some level of uncertainty ... Councils [and NMFS] have a reasonable degree of latitude in determining which estimates to use and how these estimates are to be expressed.") (citing MSA implementing regulations, 50 C.F.R. §§ 600.310, 315, 335) (internal citations omitted). An overfishing or overfished finding does not require that the stock be at a level that produces the optimum yield, but only at a level that does not jeopardize the potential of the fishery to produce maximum sustainable yield. Thus, a fishery could be producing yields far below maximum sustainable yield and optimum yield but not be in an overfishing or overfished condition.
\textsuperscript{251} 50 C.F.R. § 600.310(e)(1)(i)(A) (2009).
\textsuperscript{252} Nicholas Bousquet, Thierry Duchesne & Louis-Paul Rivest, Redefining the Maximum Sustainable Yield for the Schaefer Population Model Including Multiplicative Environmental
A fishery that the Secretary of Commerce determines is overfished requires a fishery management plan to "end overfishing immediately in the fishery and to rebuild affected stocks of fish" as quickly as possible, within ten years of the determination. Additionally, the determination that a fishery is overfished allows the Secretary to take immediate action in the form of "interim measures" or "emergency regulations," regardless of whether a fishery management plan already exists for the fishery.

The MSA does not require a finding of overfishing to trigger action—a finding by the Secretary that a fishery is "approaching a condition of being overfished" is sufficient to mandate further action. The "approaching overfishing" status is appropriate when the Secretary "estimates that the fishery will become overfished within two years" based on trends in fishing effort, fishery resource size, and other appropriate factors. A fishery with this status requires a fishery management plan that seeks "to prevent overfishing from occurring in the fishery." However, unlike the management plan for an overfished fishery, the management plan for an about-to-become overfished fishery is not subject to time and stock rebuilding requirements.

The framework of the MSA is similar to the threatened/endangered framework of the ESA in structure and in the protections it provides to affected species, although the ESA's designations may signify levels of species health that are closer to the point of extinction for a particular species. Under the ESA, endangered species are those "in danger of extinction through all or a significant portion of its range," and threatened species are those "likely to become . . . endangered . . . within the foreseeable future throughout all or a significant portion of [their] range." Like the MSA, the ESA's designations specify two levels of status based on the health of the species in question.

A comparison of the benchmarks for protection under the ESA and the MSA is instructive. Although the ESA does not define a benchmark for its goal of preventing species from becoming "in danger of extinction," the MSA does define a benchmark for its goal of "optimum" yield. Optimum yield is either "the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor" for healthy fisheries, or the yield that

254. Id. § 1854(e)(4).
255. Id. § 1855(c) (2006).
256. Id. § 1854(e)(1).
257. Id.
259. Id. § 1854(e)(4).
260. Id. § 1532(6) (2006); see supra text accompanying note 65.
261. Id. § 1532(20); see supra text accompanying note 66.
“provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.” Given that maximum sustainable yield contemplates maximum average harvest over the long run such that the biomass can regenerate itself, a fish species that becomes classified as overfished may not be in danger of extinction. Therefore, while the ESA contemplates an endangered and about-to-become endangered framework, similar to the MSA’s overfished and about-to-become overfished framework, the designations may correspond to different levels of species health.

Additionally, the MSA has different requirements for different designations in a manner that is somewhat analogous to the ESA. The “essential fish habitat” designation is the MSA’s equivalent to the ESA’s critical habitat designation. However, “essential fish habitat” is less protective, more generally applicable, and perhaps more proactive. The MSA’s consultation requirement with regards to “essential fish habitat” is similar to but weaker than that in the ESA—it does not require the consulting agency to ensure that its actions do not jeopardize managed fish species or to ensure that its actions do not destroy or adversely modify essential fish habitat.

The MSA counterpart to an ESA recovery plan requirement is MSA...
Section 304(e), which requires that fishery management plans for overfished stocks end overfishing and rebuild those stocks. Finally, the practical results of an endangered designation under the ESA are analogous to the results of an overfished or emergency condition designation under the MSA.271 Although an endangered designation broadly prohibits take,272 the Secretary can achieve the same result through his emergency powers or through an overfished condition finding.273

Moreover, because the MSA requires actions at a higher level of species health than the ESA, both in terms of status and designation of important habitat, the MSA effectively provides a “screen” to ESA listing. First, the MSA imposes a duty on the Secretary of Commerce to prevent overfishing in fishery management plans for highly migratory fish.274 In other words, the Secretary of Commerce has a general duty to prevent “a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.”275 One requirement of ESA listing is “Section 7 consultation.”276 It is unclear, however, whether Section 7 consultation would afford substantially more protection to highly migratory species than what they already have under MSA fishery management plans. For example, if NMFS listed the bluefin tuna under the ESA, Section 7 consultation would force NMFS to consult with itself regarding its Highly Migratory Species (HMS) Fishery Management Plan to ensure that no jeopardy to the tuna’s existence occurs and that no adverse modification of its critical habitat occurs.277 But, the MSA already requires fishery management plans to prevent jeopardy to the fishery’s ability to produce the maximum sustainable yield on a continuing

agency explain to the Secretary why it is not following those recommendations, where the consulting agency chooses not to follow the Secretary’s recommendations for conserving essential fish habitat), with id. § 1536(a)(2) (discussing ESA consultation requirements, which require federal agencies to insure that their actions will not jeopardize listed species or destroy or adversely modify the critical habitat of listed species).

271. See supra text accompanying notes 83, 255.

272. An endangered designation under the ESA invokes a broad range of prohibitions on the take of endangered species, including commercial activity. 16 U.S.C. § 1538(a) (2006). The ESA defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Id. § 1532(19). NMFS broadly defines “harm” as any “act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 222.102 (2009); see also id. § 17.3. These prohibitions may apply to threatened species as well. See id. § 222.301(b) (ESA implementing regulations for NMFS); id. § 17.31(a) (ESA implementing regulations for FWS). These prohibitions, however, are subject to a number of exceptions. See, e.g., 16 U.S.C. §§ 1539(a), 1536(b)(4) (2006).

273. See supra text accompanying notes 83, 255.


276. See supra text accompanying note 267.

basis. Thus, given that the MSA already mandates NMFS to prevent overfishing, the additional duty to prevent jeopardy to the species’ existence that accompanies ESA listing under Section 7 seems superfluous.

Even if NMFS’s management efforts are unsuccessful—that is, if overfishing occurs—the MSA mandates action that should improve, in an ideal world, the health of the species before ESA listing becomes necessary. To see this phenomenon in practice, one need only look to NMFS’s management of shark on its Species of Concern list. NMFS has prohibited commercial and recreational fishing of the dusky shark since 1998 and has used time and area closures to prevent take. NMFS also restricts the take of porbeagle, basking, and sand tiger shark. Thus, these species of shark receive protection similar to what they might receive under ESA listing. This sort of situation may even provide incentives for NMFS not to list MSA-managed fish species under the ESA, because in doing so NMFS would effectively be admitting the failure of management under the MSA.

If NMFS succeeds in its management efforts under the MSA, ESA listing should never be necessary.

2. Redundant International Protections: An Examination of International Law and the ESA

On October 14, 2009, both FWS and NMFS announced support for a proposal submitted by the Principality of Monaco to list the Atlantic bluefin tuna under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). Given that tuna seemed to be swimming in such dire straits, but did not seem to be on NMFS’s radar in terms of ESA listing prior to a recent petition by the Center for Biological Diversity, U.S.
support for the proposal was noteworthy. This support demonstrates a seeming NMFS preference for protecting highly migratory fish through international agreements instead of through ESA listing.287

Highly migratory fish, including tuna, come under the purview of two main international frameworks: CITES and a variety of regional international agreements on the conservation and management of highly migratory fish. The first framework, CITES began in 1973 to facilitate the “international cooperation . . . essential for the protection of certain species of wild fauna and flora against over-exploitation through international trade.”288 Similar to the ESA and MSA, CITES confers significant protection when applicable, by specifying different levels of protection for listed species.289 As a general matter, CITES listing creates a floor of protection—it does not prevent member nations from adopting stricter regulations.290 Appendix I listing is the most protective and intends to protect “all species threatened with extinction which are or may be affected by trade.”291 Appendix I bans all international trade in the listed species, subject to limited exceptions such as scientific research.292 Generally, “[t]rade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances.”293 Unlike Appendix I listing, Appendices II and III listings require lesser findings of threat and less stringent permitting requirements on trade.294 The international community widely subscribes to CITES, which now has over 170 parties.295

The ESA, which is the United States’ implementing legislation for CITES, incorporates CITES listing into its regulatory framework.296 The ESA makes it


289. See id. arts. 3–5.
290. Id. art. 14.
291. Id. art. 2, cl. 1.
292. Id. art. 3.
293. Id. art. 2, cl. 1.
294. See id. arts. 4–5.
“unlawful for any person subject to the jurisdiction of the United States to engage in any trade in any specimens contrary to the provisions of the Convention, or to possess any specimens traded contrary to the provisions of the Convention.”

The second major framework for the international conservation and management of highly migratory fish involves a variety of regional international agreements. These agreements include the International Convention for the Conservation of Atlantic Tunas, the South Pacific Tuna Treaty (SPPT), the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCFFC), and the Convention for the Establishment of an Inter-American Tropical Tuna Commission (IATTC).

For example, the Atlantic Tuna Convention, first signed in 1966, addressed the “mutual interest in the populations of tuna and tuna-like fishes found in the Atlantic Ocean” of signatory parties by facilitating “co-operat[ion] in maintaining the populations of these fishes at levels which will permit the maximum sustainable catch for food and other purposes.”

Although the name of the Atlantic Tuna Convention might suggest that it applies only to tuna species, it applies to substantially the same fish species

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297. 16 U.S.C. § 1538(c)(1) (2006). The ESA also implements CITES’s requirement for a “Scientific Authority” and “Management Authority,” by designating the Secretary of the Interior generally, and FWS specifically, as the international import and export permitting authority. See CITES art. 9; 16 U.S.C. § 1537a(a)-(c) (2006). Interestingly, there is no provision for the Secretary of Commerce as either a management or scientific authority. See id. Thus, if CITES listed an internationally traded highly migratory fish, such as tuna, it might create a unique situation in which FWS would be the permitting authority for international trade while NMFS would retain domestic jurisdiction. See id. § 1537a(a) (“the respective functions of each such Authority shall be carried out through the United States Fish and Wildlife Service”).


303. Atlantic Tuna Convention, supra note 299, preamble.
included in the MSA’s definition of “highly migratory fish.”

The Atlantic Tuna Convention established the International Commission on the Conservation of Atlantic Tunas (ICCAT) and assigned it various responsibilities. ICCAT’s recommendations are binding, subject to procedures to handle objections to recommendations, and its recommendations require action by member nations. The Atlantic Tuna Convention currently has forty-six signatories.

Congress passed the Atlantic Tunas Convention Act (ATCA) of 1975 to implement the Atlantic Tuna Convention. The ATCA confers general authority to administer and enforce the Atlantic Tuna Convention on the Secretary of Commerce. Congress faithfully implemented the Atlantic Tuna Convention’s intent to make ICCAT recommendations binding on member nations by declaring that:

It shall be unlawful . . . for any person subject to the jurisdiction of the United States to ship, transport, purchase, sell, offer for sale, import, export, or have in custody, possession, or control any fish which he knows, or should have known, were taken or retained contrary to the recommendations of the Commission made pursuant to article VIII of the Convention and adopted as regulations pursuant to section 6 of this Act.

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304. Compare 16 U.S.C. § 1802(21) (2006 & Supp. 2009) (“The term ‘highly migratory species’ means tuna species, marlin (Tetrapturus spp. and Makaira spp.), oceanic shark, sailfish (Istiophorus spp.), and swordfish (Xiphias gladius.”), with Atlantic Tuna Convention, supra note 299, art. 4, § 1 (“the Commission shall be responsible for the study of the populations of tuna and tuna-like fishes (the Scombriformes with the exception of the families Trichiuridae and Gempylidae and the genus Scomber) and such other species of fishes exploited in tuna fishing in the Convention area as are not under investigation by another international fishery organization.”), and INT’L COMM. FOR THE CONSERVATION OF ATLANTIC TUNAS, ICCAT MANUAL ch. 2 (2009), http://www.iccat.int/en/ICCATManual.htm (“Species Directly Covered by the Convention” are tuna, marlin, sailfish/spearfish, and swordfish, and “Bycatch Species of Special Importance” include shark such as blue shark, shortfin mako, and porbeagle) (last visited Dec. 18, 2010).

305. Atlantic Tuna Convention, supra note 299, art. 3. ICCAT’s primary responsibilities are to lead data collection and analysis of tuna population trends, id. art. 4, and to recommend to member nations measures “to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area . . .”, id. art. 8, § 1(a); “[t]he area to which this Convention shall apply . . . shall be all waters of the Atlantic Ocean, including the adjacent Seas . . . at levels which will permit the maximum sustainable catch.” Id. art. 1.

306. Id. art. 8, §§ 2–5.

307. Id. art. 9.


310. 16 U.S.C. § 971d(a). Congress may have intended ATCA to complement the ESA in implementing substantive international protections of highly migratory fish. See supra notes 304–307 and accompanying text. This would require an expectation that the Tuna Convention and ATCA protect highly migratory fish, while CITES and the ESA protect other internationally traded species. However, if the Tuna Convention fails to protect a tuna species, the ATCA will not protect it. See 16 U.S.C. § 971c(a)(2). But CITES and the ESA could still protect it, and clearly, NMFS and FWS have contemplated this possibility. See supra text accompanying note 284.
Act, without regard to the citizenship of the person or vessel which took the fish.\footnote{311}

These internationally governed recommendations considerably limit the Secretary's\footnote{312} discretion in setting quotas, at least regarding highly migratory fish in the Atlantic Ocean. Unlike CITES, ICCAT quota recommendations may preclude changes in domestic implementation.\footnote{313} The international agreements for the Pacific Ocean and their implementing acts\footnote{314} contain similar provisions for conservation and management through convention-created commissions.\footnote{315}

As a practical matter, the presence of international measures seems to weigh relatively heavily on NMFS listing decisions. For example, in response to a petition to list the Atlantic white marlin as threatened or endangered under the ESA, NMFS found the listing unwarranted “[a]fter reviewing the best scientific and commercial information available and the effects of current conservation efforts.”\footnote{316} NMFS determined that the numbers of white marlin were not at a level that suggested an “imminent extinction risk” and that there was no evidence of range contraction or habitat destruction that suggested such

\footnote{311} 16 U.S.C. § 971e(a), (a)(2).
\footnote{312} NMFS, through authority delegated to the Secretary of Commerce, administers most of the responsibilities of the United States under the Pacific Ocean agreements. See id. §§ 6901(9), 6905(b) (2006 & Supp. 2009). “The Secretary [of Commerce] shall ensure the consistency, to the extent practicable, of fishery management programs administered under [the Western and Central Pacific Fisheries Convention Implementation Act], the Magnuson-Stevens Fishery Conservation and Management Act, the Tuna Conventions Act, the South Pacific Tuna Act, . . . and the Atlantic Tunas Convention Act.” Id. §6905(b) (internal citations omitted).
\footnote{313} Id. § 971d(c)(3)(K) (2006) (“[N]o regulation promulgated under this section may have the effect of increasing or decreasing any allocation or quota of fish or fishing mortality level to the United States agreed to pursuant to a recommendation of the Commission.”). However, ICCAT does not necessarily issue recommendations for all highly migratory fish species within the scope of the Atlantic Tuna Convention. Without such recommendations, the Secretary of Commerce can exercise his discretion pursuant to the MSA to manage highly migratory fish. See Recreational Fishing Alliance v. Evans, 172 F. Supp. 2d 35, 47 (D.D.C. 2001). Further, this preclusive effect seems only to apply to regulations promulgated by the Secretary of Commerce under ATCA and may not apply to regulations the Secretary of Commerce promulgates under other statutes, such as the ESA. See 16 U.S.C. §§ 971d(c)(3)(K), 1533(a)(2) (2006). The difficulty in effectively coordinating various domestic implementations of an international regulatory regime has been noted in other contexts. See generally Achraf Farraj, Note, Refugees and the Biometric Future: The Impact of Biometrics on Refugees and Asylum Seekers, 42 COLUM. HUM. RTS. L. REV. (forthcoming Spring 2011) (discussing various difficulties in coordinating common asylum and refugee policies among European Union member states). The binding nature of ICCAT recommendations, to the extent they constrain unilateral changes in domestic law, theoretically eases some of the challenge in cross-national coordination.
\footnote{314} See supra text accompanying notes 300–302.
\footnote{315} E.g., WCPFC, supra note 301, art. 9; IATTC, supra note 302, art. 1.
a risk. However, the Status Review Team found that the white marlin had declined to approximately 5–15% of its historic level and that current domestic measures could not prevent further decline. In the face of this scientific uncertainty, the presence of binding international obligations ultimately seemed to make the difference between listing and not listing.

But NMFS’s reliance on the success of international conservation efforts was far from unequivocal. In introducing a discussion of the importance of international conservation efforts, NMFS suggested that ESA protection would not be adequate to prevent the decline of the white marlin, because the United States was only responsible for approximately 5% of the total world catch. Thus, NMFS concluded that ICCAT was “the only forum in which effective cooperative management actions could be taken to reverse the white marlin’s population decline.” The Status Review Team implicitly disagreed, stating that it was “pessimistic about the implementation of conservation measures for white marlin.” Furthermore, the Status Review Team “commented negatively on ICCAT’s resolve to adopt further management measures for white marlin a [sic] bycatch species in the immediate future,” and “expressed concern that the ICCAT recommendation would not be fully effective.”

Despite an admittedly unknown “offset [in] conservation benefit of the ICCAT recommendation” from “post-release mortality, non-compliance with ICCAT recommendations, and a significant level of illegal, unreported, and unregulated fishing,” NMFS nonetheless concluded that because ICCAT’s
recommendations were binding obligations on member nations, listing was unnecessary.324 In other words, NMFS effectively equated “binding” with “effective,” despite substantial disagreement on this point.325 Thus, NMFS’s 2002 decision not to list the white marlin illustrates how binding international obligations, even if the effectiveness of such measures is uncertain, can help justify not extending ESA protections to highly migratory fish.326

Highly migratory fish, especially those substantially affected by international trade, are generally subject to multiple layers of international conservation and protection measures. These measures, if truly successful, might obviate the need for listing under the ESA. For example, an Appendix I CITES listing for the Atlantic bluefin tuna327 may make ESA threatened or endangered listing unnecessary. The ESA automatically incorporates prohibitions on import and export made through such a listing.328 Thus, the mere possibility of international protection is an important factor in determining whether listing is warranted. In making ESA listing determinations on threatened or endangered status, one of the factors that the Secretary must take into account is the “inadequacy of existing regulatory mechanisms.”329

The case of the Atlantic bluefin tuna demonstrates the effect of overlapping international and domestic management regimes. Through the ATCA, ICCAT recommendations provide another layer of binding protection outside of ESA listing.330 If the primary threat to the tuna is truly just overexploitation through international trade, CITES or ICCAT could

324. Id.
325. See id. NMFS made a point of noting that it was “not relying on the expectation of adoption of additional, future conservation measures for white marlin in making this listing determination but on the information on the stock’s current status and the currently implemented conservation measures.” Id. NMFS also made a point of stating that “[r]egulatory mechanisms that are not currently in place were not considered in this listing determination.” Id.
326. NMFS also cited existing protections under the MSA as a factor militating against ESA protection. Id. Additionally, in response to a comment implying that the Atlantic bluefin tuna warranted ESA protection and MSA emergency protection, NMFS implicitly disagreed and expressed its preference for MSA-style species management with international coordination. Cf. Atlantic Highly Migratory Species; Atlantic Bluefin Tuna Quota Specifications and Effort Controls, 71 Fed. Reg. 30,619, 30,623 (May 30, 2006).

International management of highly migratory species is complex and difficult, and domestic management including unilateral action by one nation may or may not have the intended results on an international scale. For example, although the United States could adjust the domestic rate of underharvest roll-over for conservation purposes, this approach might not be supported internationally, and the underharvest could be reallocated to another country. In domestic management, NMFS works to balance socio-economic impacts to U.S. fishermen, ecological impacts to BFT stocks and other ecosystem components, and impacts of domestic management on international rebuilding and negotiations.

327. See supra text accompanying notes 284–285.
328. See supra text accompanying note 297.
330. See supra text accompanying note 306.
sufficiently protect the Atlantic bluefin tuna to eliminate the need for a threatened or endangered designation under the ESA.\textsuperscript{331} Even if these international conservation regimes did not protect the bluefin tuna,\textsuperscript{332} the MSA, as discussed previously, is yet another redundant regulatory structure that provides a screen of protection before ESA listing becomes necessary.

\textbf{D. Administrative Deference or Administrative Obfuscation: The Effect of Scientific Uncertainty}

Although the ESA requires the "best scientific and commercial data available,"\textsuperscript{333} the best data available does not necessarily reflect consensus or certainty. Indeed, situations where scientific and commercial data do not point to a definitive conclusion are the norm.\textsuperscript{334} Highly migratory fish fit this norm, as there is substantial uncertainty involving the biology of individual species\textsuperscript{335} and how highly migratory fish operate within their habitat.\textsuperscript{336} As a result, agencies often use "[v]alues [to] inform decisions about how to extrapolate study results,"\textsuperscript{337} resulting in "complete discretion over [the meaning of the phrase ‘the best scientific and commercial data available’ and [the ability to] define[] and use[] them to their advantage."\textsuperscript{338}

Moreover, ESA listing standards are difficult to apply to highly migratory fish—specifically in defining the species, its range, the risk of extinction, and the "foreseeable future"—and thus particularly lend themselves to agency discretion. NMFS has used scientific uncertainty to make questionable assumptions about the biology of the Atlantic white marlin in relation to two other key ESA listing standards: "in danger of extinction" and "within the foreseeable future." The case of the white marlin listing demonstrates how small, seemingly insignificant variations in these assumptions can make the difference between listing and not listing, or between implementing substantial protections and preserving the status quo. This case study demonstrates

\textsuperscript{331} If it is true that (1) the "main driver" of the threat posed to the Atlantic bluefin tuna is demand from international trade, Atlantic Bluefin Tuna CITES Listing Proposal, \textit{supra} note 285, at 7; and (2) other factors do not sufficiently compound the threat posed by overexploitation, see 16 U.S.C. § 1533(a)(1)(A)–(E), ESA listing of the Atlantic bluefin tuna as threatened or endangered would be unnecessary if the tuna was also listed in CITES Appendix I.

\textsuperscript{332} This seems to characterize the present state of affairs—the most recent proposal to protect the bluefin tuna through CITES listing failed. See Jolly & Broder, \textit{supra} note 287.

\textsuperscript{333} 16 U.S.C. § 1533(b)(1)(A).

\textsuperscript{334} Mariyetta Meyers, \textit{Maximizing Scientific Integrity in Environmental Regulations: The Need for Congress to Provide Guidance When Scientific Methods are Inadequate or When Data is Inconclusive}, 12 \textit{ANIMAL L.} 99, 101 nn.5–6 (2005).

\textsuperscript{335} See, \textit{e.g.}, Susan Milius, \textit{Where Tuna Go}, 167 \textit{SCI. NEWS} 277 (2005).

\textsuperscript{336} See, \textit{e.g.}, Hutchings & Reynolds, \textit{supra} note 223, at 303.


\textsuperscript{338} \textit{Id.} at 439.
specifically how NMFS used these assumptions to justify the listing-not-warranted determinations for the Atlantic white marlin and its subsequent de-listing from all NMFS lists under the ESA. The case of the white marlin is a good example of how the administrative implementation of the statutory regime governing highly migratory fish is disinclined to provide ESA protection.

1. Highly Uncertain Science: The Difficulty in Defining a Species and its Range in the Oceanic Environment

Recall that the ESA defines "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range" and "threatened species" as any species likely to become endangered "within the foreseeable future." Species is defined as including subspecies or "distinct population segment[s]" (DPS). Thus, as an initial threshold matter, any given cross-section of wildlife must qualify as a "species," "subspecies," or "distinct population segment" to be eligible for ESA listing. FWS and NMFS, through a joint rule, have further defined DPS. To qualify as a DPS, a given cross-section of wildlife must be both "discrete" and "significant."

Discreteness has two definitions. The first definition is a "marked[] separat[ion] from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors." The second definition is a "delimit[ation] by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the [ESA]."

Determining significance requires an evaluation of the purported DPS's "importance to the taxon to which it belongs." This includes the following considerations: (1) whether the DPS persists in a unique or unusual ecological setting; (2) whether the loss of the DPS "would result in a significant gap in the range of a taxon"; (3) whether the DPS is "the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range"; and (4) whether the genetics of the DPS

339. Supra notes 65–66 and accompanying text.
341. NMFS also developed a similar concept of the "evolutionary significant unit" (ESU) as an analogue to DPS to apply only to species of salmonids native to the Pacific Ocean. Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act, 61 Fed. Reg. 4,722 (Feb. 7, 1996). According to the ESU concept, which FWS and NMFS consider consistent with their DPS definition, a stock can be considered a DPS if it is reproductively isolated and if it is an “important component in the evolutionary legacy of the species.” Id. at 4,725.
342. Id. at 4,725.
345. Id.
"differs markedly from other populations of the species."346 If one can successfully show that a given cross-section of wildlife is a DPS or subspecies, ESA listing probably becomes easier. Instead of having to demonstrate the various ESA listing requirements for an entire species, one must only show them for a relatively small cross-section of wildlife.

Finding a DPS of highly migratory fish is exceedingly difficult. The substantial scientific uncertainty surrounding the biology of highly migratory fish makes discreteness or significance of an individual stock of fish difficult to establish. For example, the Atlantic bluefin tuna traverses the entire Atlantic Ocean in its migratory patterns.347 Recent studies suggest that different stocks of bluefin tuna breed on opposite sides of the Atlantic and mix in feeding grounds, but substantial uncertainty exists as to whether these two stocks are markedly discrete.348 Significance is similarly difficult to establish. In the bluefin tuna’s case, (1) spawning site loyalty is still a matter of substantial speculation, (2) different stocks of tuna are known to intermix in feeding grounds, and (3) their range is substantial—indeed, perhaps the entire ocean—and to some extent, unknown.349 Consequently, factors of significance that depend on the species’ range350 and its genetic differences may be difficult, if not impossible, to prove.351

Thus, an entire stock of fish can collapse in a given geographic area and avoid ESA listing, especially where substantial scientific uncertainty surrounds the biology of the fish. Although the ESA mandates the use of the “best scientific and commercial data available,” these concepts of discreteness and significance are necessarily dependent on available data. If data is simply unavailable, then it is unlikely that any given stock of fish will be found either discrete or significant, much less both.

For the same reasons, finding that the collapse of stock of fish places the entire species in danger of extinction “through all or a significant portion of its range” for the purposes of ESA protection is similarly difficult. First, as discussed previously, a collapse of a fish stock does not necessarily mean that

346. Id.
347. Milius, supra note 335, at 278.
348. See id. at 277–78. Additionally, because international agreements manage the Atlantic bluefin tuna in part, the species probably would not qualify for discreteness due to differences in control, management, conservation, and regulation across international boundaries. See supra notes 298–302 and accompanying text.
349. Block et al., supra note 95, at 9384 (“Data on bluefin tuna dispersal patterns have been difficult to obtain because of the limited resolution of analytical tools available for studying pelagic fish.”).
350. Because the significance prong of the DPS test examines, among other things, whether the loss of the DPS would result in “a significant gap in the range of a taxon,” it thus incorporates, to some extent, the requirement that the species must be in danger of extinction throughout all or a significant portion of its range. See supra text accompanying note 346.
351. See, e.g., Crabtree et al., supra note 116, at 4–6 (describing the one- and two-stock hypotheses for the white marlin).
all the fish are gone.\footnote{352} Second, given that the stock is not discrete, the existence of other stocks of the same fish elsewhere in the world can justify a listing-not-warranted finding.\footnote{353} Similarly, even if the stock is found discrete, if it is not significant, then its endangerment does not threaten the species enough to warrant ESA listing.\footnote{354} Although population collapse of a highly migratory fish species in a specific area would be alarming and important, ESA listing might not be achievable unless it could be shown that the species was collapsing on a global, or semi-global, scale.

2. Precarious Results: The Determinativeness of Analytic Assumptions in an Environment of Scientific Uncertainty

The 2002 Status Review of the Atlantic white marlin demonstrates how scientific uncertainty regarding the biology of a highly migratory fish allows for questionable assumptions that can justify any determination regarding ESA listing. This status review was contentious for many reasons.\footnote{355} One key dispute surrounded NMFS’s use of a quantitative threshold for ESA listing,\footnote{356} something NMFS has rarely used in the past.\footnote{357} In setting the threshold, the Status Review Team determined that ESA listing would not be appropriate until the biomass of the Atlantic white marlin reached just 1% of carrying capacity (K).\footnote{358} Despite the technical expertise of the Status Review Team, this determination was rather conclusory—the status review document only states that the team “agreed that 0.01K would indicate a population with an ESA-level problem,” and that “[t]he 0.01K level is also consistent with the SRT’s evaluation of risk, based on absolute abundance.”\footnote{359}

Even with heavy reliance on quantitative methods throughout the status review document, reasoning as to this threshold was lacking.\footnote{360} The Status Review Team perhaps recognized this defect, making the determination “without concluding at this time whether the 0.01K level would be most consistent with a vulnerable, threatened, or endangered level of risk.”\footnote{361} Notably, an inability to specify the level of extinction risk represented by a given threshold is consistent with an inability to determine the appropriateness
of the threshold in the first place.

The failure to clarify the extinction risk standard belies either a misunderstanding of ESA listing standards or an attempt to delay ESA listing while simultaneously preserving the maximum amount of agency discretion in the future. One explanation for this failure to clarify is that the Status Review Team was simply conflating international and domestic wildlife protection standards. There is no “vulnerable” level of extinction risk in the context of the ESA. The second explanation for the failure to clarify is that the Status Review Team sought to maximize NMFS’s flexibility in the future regarding the level of ESA protection. By leaving the question of what level of protection the 0.01K level represented, NMFS would be free to declare the 0.01K extinction risk standard to be consistent with either a threatened or an endangered status if the species ever did reach the 0.01K level.\textsuperscript{362}

Quantitative thresholds for listing are relatively rare, and are not required to successfully justify ESA listing. The case of the sawfish is revealing in this respect. Like many highly migratory fish, the sawfish—both largetooth and smalltooth—can receive meaningful international protection under CITES Appendix I.\textsuperscript{363} The status review for the smalltooth sawfish, which found that the sawfish warranted ESA protection as an endangered species, contained no estimations or usages of quantitative thresholds for listing.\textsuperscript{364} In the sawfish’s case, “quantitative data [was] limited,” so NMFS relied on a combination of data from the 1940s through the 1980s, anecdotal evidence, and “inferences [] drawn from closely related species.”\textsuperscript{365} Similarly, in the proposed listing for the largetooth sawfish under the ESA, NMFS used a method that relied on qualitative, rather than quantitative, information.\textsuperscript{366}

By contrast, the white marlin had a relatively large amount of data, and the statistics were not encouraging. All the stock assessments at the lower end

\begin{itemize}
\item\textsuperscript{362} The Status Review Team seemed to want it both ways, disavowing any conclusion about what the 0.01K extinction risk standard actually represented in the context of the ESA, but implicitly treating the 0.01K extinction risk standard as consistent with an endangered designation. See id. at 40-42; see also Nat’l Oceanic & Atmospheric Admin. Nat’l Mar. Fisheries, Atlantic White Marlin Status Review Document, REP. TO NAT’L MARINE FISHERIES SERVICE, S. E. REGIONAL OFF. 75 (2007), http://sero.nmfs.noaa.gov/pr/pdf/2007%20Atlantic%20white %20marlin%20status%20review.pdf [hereinafter 2007 Atlantic White Marlin Status Review Document] (defining threatened as less than or equal to 0.01K, with declining population trends, and endangered as less than 0.01K).
\item\textsuperscript{363} CITES.org, Appendices I, II & III, http://www.cites.org/eng/app/appendices.shtml (last visited Dec. 18, 2010).
\item\textsuperscript{365} Endangered and Threatened Species; Final Endangered Status for a Distinct Population Segment of Smalltooth Sawfish (Pristis pectinata) in the United States, 68 Fed. Reg. 15,674, 15,678 (Apr. 1, 2003).
\item\textsuperscript{366} Endangered and Threatened Wildlife and Plants; Proposed Listing for the Largetooth Sawfish, 75 Fed. Reg. 25,174, 25,179 (May 7, 2010).
\end{itemize}
of the range estimated the biomass of the white marlin to be below 0.10K, and none of the stock assessments at the higher end of the range estimated the white marlin to be higher than 0.18K. Thus, without the 0.01K extinction risk standard, the status of the white marlin may have warranted ESA listing. Framed differently, NMFS had decided that the white marlin did not warrant ESA protection unless it had declined at least 99% of its historic range, and that a decline of 82% to 90% was insufficient.

Therefore, it is plausible that the use of the quantitative threshold was necessary to justify the listing-not-warranted finding for the white marlin even though the white marlin’s population numbers had declined to somewhere around 0.10K. The quantitative threshold made a listing-not-warranted finding relatively straightforward—stock assessments of the absolute population size of the white marlin estimated its numbers at 100,000 to 700,000, far above the 20,000 individuals specified by the 0.01K extinction risk standard. Given the current levels of white marlin, it was clearly not currently “endangered.” But to avoid any listing under the ESA, the Status Review Team also had to find that the population of the white marlin would not reach the 0.01K extinction risk standard “within the foreseeable future.”

The “foreseeable future” analysis in the context of the white marlin listing decision further demonstrates how NMFS can manipulate basic assumptions to justify any listing decision. The determination of whether the white marlin would reach the 0.01K extinction risk standard “within the foreseeable future” was not clear, because it was extremely sensitive to what NMFS defined as the “foreseeable future.” In 2002, NMFS ultimately defined the “foreseeable future” as ten years using the World Conservation Union’s (IUCN) standard, which defined the foreseeable future as the longer of ten years or three generations. The decision implies that NMFS estimated three generations of the white marlin to be less than ten years, but interestingly, NMFS did not explicitly indicate how long it estimated three generations of white marlin to be.

There are some indications that NMFS understood that one generation of white marlin spanned a range of three to five years, as noted in their 2007 status review, as opposed to the relatively precise estimate of three years used in its 2002 status review. If NMFS truly understood one generation of white marlin to be only three years, and not a range of three to five years, then it would have suited NMFS to state as much. This was a chance for NMFS to highlight its scientific conservatism—if one generation of white marlin was three years, the

367. Crabtree et al., supra note 116, at 35.
368. Id.
369. Id.
370. Id. at 40.
371. Id. at 28–29.
372. See id. at 3–4 (“Biological Characteristics”).
"foreseeable future" would have been nine years. Thus, by using the IUCN’s standard of ten years, NMFS could show that it was acting conservatively.\footnote{374} This was not the case, however. NMFS declined entirely to state any estimate for a generation of white marlin, and thus avoided having to state the range that this estimation spanned. The use of the relatively precise three-year generation estimate in its 2002 status review is especially odd given that NMFS had admitted, "[l]ittle is known about the age, growth[.], and reproductive biology of white marlin."\footnote{375}

By declining to spell out specifically its assumptions underlying the "foreseeable future," NMFS avoided highlighting that they were, in fact, acting less conservatively by using a ten-year standard. If NMFS had estimated one generation of white marlin to be as long as five years, the foreseeable future would be fifteen years. As it turns out, this five-year difference may have been the determinative factor in finding that ESA listing was not warranted—in fact, the five-year difference in the analytical assumption doubled the extinction risk.\footnote{376}

A comparison with the 2006 status review of the Cook Inlet beluga whale DPS shows NMFS’s inconsistency in its definition of "foreseeable future." Unlike the white marlin status review, NMFS did not refer to IUCN’s foreseeable future guidelines in the beluga whale status review, although it may have recognized them implicitly.\footnote{377} In one instance, the Status Review Team noted a population prediction within three to five generations.\footnote{378} However, this time horizon was not used to assess the risk of extinction within the foreseeable future.\footnote{379}

Similar to the white marlin status review, NMFS did not explain the time horizon chosen for the foreseeable future of beluga whales—100 years and 300 years, or 10 to 30 generations.\footnote{380} These estimates did not seem to reflect the kind of certainty that might justify calling three centuries the "foreseeable future." The Status Review Team, in fact, admitted, "distributions of possible

\footnote{374. * Cf. id. at 79. By 2007, when mortality in the stock of white marlin had started showing signs of stabilization, NMFS in its status review made it a point to highlight the range of the foreseeable future as up to fifteen years—using the 0.01K extinction risk standard, a fifteen year time horizon resulted in less than a 10% risk that the stock would decline to the specified threshold. See id.}

\footnote{375. * Crabtree et al., supra note 184, at 3.}

\footnote{376. * The Status Review Team concluded in 2002 that the probability that the stock of the Atlantic white marlin would reach 0.01K in ten years was 20%. * Id. at 41. A time horizon of fifteen years, however, doubles that risk to approximately 45%, which might have justified at least a designation of threatened under the ESA. See id.}


\footnote{378. * Id. at 29.}

\footnote{379. * See id. at 63.}

\footnote{380. * See id. at 38–62.
outcomes were sensitive to a variety of poorly known small population effects. Even the models that the Status Review Team considered “most representative” exhibited such variability that they could support either a warranted or a not-warranted finding: “The probability of extinction within 100 years ranged from 0% to 29%, and within 300 years ranged from 29% to 68%.” The comparison of the white marlin and beluga whale status reviews suggests that NMFS chooses the definition of the “foreseeable future” that best supports what may be a preconceived listing determination.

Scientific uncertainty inevitably implies estimated ranges or confidence intervals, essentially allowing the evaluator to pick and choose the appropriate number on which to base calculations. For ESA listing determinations, one might suppose that choosing the more conservative number is most consistent with the ESA purposes. But such a mandate is not explicit in the text of the ESA. When the “best scientific and commercial data available” is not complete or is subject to ranges in estimation, the choice of methods and assumptions leaves a subtle, but important, loophole through which the agency can manipulate the “best scientific data available” to support its ultimate conclusion. Further, these assumptions, such as what it means to be “in danger of extinction” and what constitutes the “foreseeable future,” involve sufficiently technical analytical skills and judgments, allowing conclusory statements and opaque reasoning to elude more in-depth scrutiny.

The white marlin’s journey through the ESA listing process, if anything, shows how the biology of highly migratory fish is sufficiently uncertain to allow NMFS almost complete discretion over the outcome of an ESA listing determination. In 2008, shortly after NMFS again found listing unwarranted for the white marlin, it initiated the process to remove the white marlin from its species of concern list. Proponents justified the removal request based on the 2007 status review, which found that, relative to 2002, the health of the Atlantic white marlin population appeared to be improving. Ultimately,

381. Id. at 61.
382. Id. at xi.
383. Regarding the level of extinction risk, the Status Review Team easily could have chosen 0.02K, 0.03K, or 0.04K, for example, and justified that choice in the same way it justified the 0.01K extinction risk standard. See supra note 359 and accompanying text. With respect to the foreseeable future, the Status Review Team easily could have chosen a time horizon of fifteen years—the outer range of the white marlin’s three-generation estimate—instead of ten years. See supra notes 371–376 and accompanying text.
NMFS removed the white marlin from the species of concern list, over the objections of the Endangered Species Division, which noted that using the 2007 status review to justify this conclusion involved relying on highly questionable assumptions that did not properly account for uncertainty in the statistical analysis. Alas, consistent with the lack of reasoning in the 2002 status review, the Endangered Species Division's concerns were unaddressed—the Office of Protected Resources simply checked “I do not concur.” Apparently, in the face of uncertainty, nothing more than simple disagreement was required.

CONCLUSION

Although ESA listing of highly migratory fish is improbable, it is not impossible. Another useful juxtaposition to examine how social perceptions interact with the political, economic, legal, and regulatory framework regarding the management of highly migratory fish is the case of anadromous fish, many of which NMFS currently lists as protected under the ESA. Both are fish species managed under the MSA. Both are highly commercialized. Both are probably similar in terms of perceived charisma (or lack thereof). Both are subject to uncertain and evolving scientific knowledge. A comparison of highly migratory fish and anadromous fish shows how the combination of all these factors—charisma, commercialization, redundant domestic and international protections, and scientific uncertainty—complicate ESA listing for highly migratory fish.

The proximity of anadromous fish to terrestrial freshwater habitat (and thus, humans) may increase their charisma. Also, the relatively high visibility of the threats to their survival may reduce the scientific uncertainty regarding species health. Furthermore, anadromous fish are typically entirely under the jurisdiction of the United States. Thus, redundant international protections cannot be a justification for not listing them under the ESA. Because anadromous fish spend significant periods of their life cycles in terrestrial freshwater


388. Id.

390. See e.g., 2009 ENDANGERED SPECIES BULL., supra note 14, at 5.


392. See id. § 1801(a).

393. See Kellert, supra note 102, at 530.

394. 16 U.S.C. §§ 1811(a)–(b). The MSA even asserts jurisdiction when anadromous fish travel outside the exclusive economic zone of the United States, as long as they are not in the waters of a foreign nation. Id. § 1811(b).
habitat, and interact more directly with a wider portion of the human population and terrestrial species, their value becomes more intertwined with a human sense of "place," as well as with the survival of charismatic mega-fauna.

Additionally, threats to both the species itself and its habitat are more directly observable, and, perhaps, receive more attention for conservation as a result. For example, only a limited number of people—likely composed of anglers and scientists—personally witness the threat that overexploitation poses to highly migratory fish. By contrast, because they spend much of their life in rivers and lakes, threats to anadromous fish are much more visible to the broader public. In addition to anglers and scientists, developers and homeowners may be aware that their land development activities threaten anadromous fish through extensive habitat destruction and degradation.

However, because "[s]urprisingly little is known about the basic habitat requirements of the vast majority of fish species," there is no conclusive evidence that anadromous fish are more in danger of extinction than highly migratory species. The ESA listing of anadromous fish species thus largely reflects differences in mere perceptions—the difference in the visibility of the species, the special connection with the species to the people of the area, the perceived threats to survival, and the lack of redundant international protections.

395. E.g., Scott M. Gende et al., Pacific Salmon in Aquatic and Terrestrial Ecosystems, 52 BIOSCIENCE 917, 917 (2002) ("This 'salmon crisis' looms large in the public eye, because it has serious and wide-ranging economic, cultural, and ecological repercussions.").


398. Cf. Hutchings & Reynolds, supra note 223, at 303 (suggesting that the visibility of the environment and habitat degradation can create a perception that some species are less susceptible to habitat loss than others).


400. Hutchings & Reynolds, supra note 223, at 303.

401. Similarly, examining the case of sea turtles, which enjoy relatively robust protections when compared to highly migratory fish, further suggests the importance of social and cultural attitudes to species protection. Currently, seven species of marine turtles are protected under the ESA, and sea turtles generally are also protected by international agreements. Marine Turtles, NAT’L MAR. FISHERIES SERVICE OFF. OF PROTECTED RESOURCES, http://www.nmfs.noaa.gov/pr/species/turtles/ (last visited Dec. 18, 2010). Sea turtles possess many of the characteristics of typical "charismatic megafauna." See Karen L. Eckert & Arlo H. Hemphill, Sea Turtles as Flagships for Protection of the Wider Caribbean Region, 3/4 J. MARITIME STUDIES 119, 122 (2005) (noting turtles’ "relatively large size, associated mythology[, ] . . . unthreatening nature, and seemingly expressive ‘facial features’ (for example ‘crying’ during egg-laying’), available at http://marecentre.nl/mast/documents/Mast-2004p.119-144.pdf. Like anadromous fish, sea turtles are generally more accessible to the public and thus may similarly be intertwined with a “sense of place” among human beings. See id. ("[A]ccessibility, especially during nesting, has been instrumental . . . for raising awareness and increasing the popularity of sea turtles.").
In the context of ESA listing, highly migratory fish face a battle against the current. Overlapping international and domestic regulatory regimes already extensively manage highly migratory fish. The high commercial value causing the overexploitation of many highly migratory fish is a double-edged sword. On one hand, it makes ESA protection unpalatable to a variety of commercial and recreational fishing interests. On the other hand, as highly migratory fish become more difficult to find due to declining populations, the market for these fish will eventually dry up—assuming that the price of rarity and prestige is not sufficiently high to prevent commercial extinction and that the population has not declined to a level that justifies ESA protection. Highly migratory fish are valued primarily for utilitarian purposes, and their management regimes reflect a tendency to extract as many fish as the population can sustain. Unlike their cetacean neighbors, highly migratory fish are not particularly valued for esthetic or moral reasons, and thus lack this additional impetus for protection.

Finally, because the scientific community knows relatively little about the biology and habitat of highly migratory fish, decision makers have a relatively broad discretion to base their decisions on any number within an estimated range. Furthermore, not only do they choose the numerical assumptions of their quantitative models, they also choose whether to use quantitative models at all.

ESA listing may very well be the “wrong way” to protect highly migratory fish, as the recreation-minded National Coalition of Marine Conservation puts it. Even if the most effective protection of highly migratory fish is internationally coordinated protection, it does not follow that no protection should be a preferred course over some unilateral protection under the ESA, or that international protection is the only method of protection—unless, of course, a nation commits itself to extracting its last share of a “resource” because it is convinced that that resource will inevitably run out. But if conservation is truly the central concern, then it may very well be time to look to last resorts, including unilateral action. The near future will demonstrate how serious the United States (and, indeed, the entire global community) is in protecting highly migratory fish like the bluefin tuna. Even before the recent catastrophe in the Gulf of Mexico near bluefin tuna

402. See Crabtree et al., supra note 116, and text accompanying note 188.
403. The Center for Biological Diversity recently petitioned NMFS to list the Gulf of Mexico stock of the bluefin tuna as endangered under the ESA, and NMFS will make a determination on whether to list the tuna under the ESA after the completion of a status review. See Andrew W. Lehren & Justin Gillis, Endangered-Species Status Is Sought for Bluefin Tuna, N.Y. TIMES, June 23, 2010, at A21; supra note 286 and accompanying text.
404. An explosion at BP’s Deepwater Horizon oil rig in the Gulf of Mexico ultimately
breeding grounds, the United States had acknowledged the “spectacular decline” of the bluefin tuna. Unless the Gulf of Mexico disaster spurs a sudden shift in general attitudes regarding the consumption of fish (and there is no sign that it has), demand for the bluefin tuna will continue to lead the species to its demise. And with the international community fractured as to whether to protect the bluefin tuna, ESA listing may be the only option left.


405. Jolly & Broder, supra note 287; see supra text accompanying note 17.

406. See, e.g., Anne Mostue, Maine’s Congressional Delegation Opposes Decision to Consider Tuna Listing, ME. PUBLIC BROADCASTING NETWORK (Sept. 17, 2010), http://www.mpbn.net/News/MaineNewsArchive/tabid/181/ctl/ViewItem/mid/3475/Itemld/13560/Default.aspx; Janet McConnaughey, Feds to Study Whether Oil Endangered Bluefin Tuna, BUSINESSWEEK.COM (Oct. 11, 2010), http://www.businessweek.com/ap/financialnews/D9IPLMGG1.htm. NMFS has already acknowledged the political sensitivity of the recent petition to list the tuna under the ESA. NMFS has taken care to highlight a disclaimer on its website stating that its recent determination on the Center for Biological Diversity’s petition was limited to determining whether the petition “contain[ed] ‘substantial information’ that the petitioned action may be warranted; it is not a listing for Atlantic bluefin tuna.” Bluefin Tuna (Thunnus Thynnus), NAT’L MARINE FISHERIES SERV., http://www.nmfs.noaa.gov/pr/species/fish/bluefintuna.htm (last visited Dec. 18, 2010) (emphasis in original). Similar disclaimers do not exist on other candidate species’ websites. See, e.g., Bumphead Parrotfish (Bolbometopon Muricatum), NAT’L MARINE FISHERIES SERV., http://www.nmfs.noaa.gov/pr/species/fish/bumpheadparrotfish.htm, (last visited Dec. 18, 2010).
